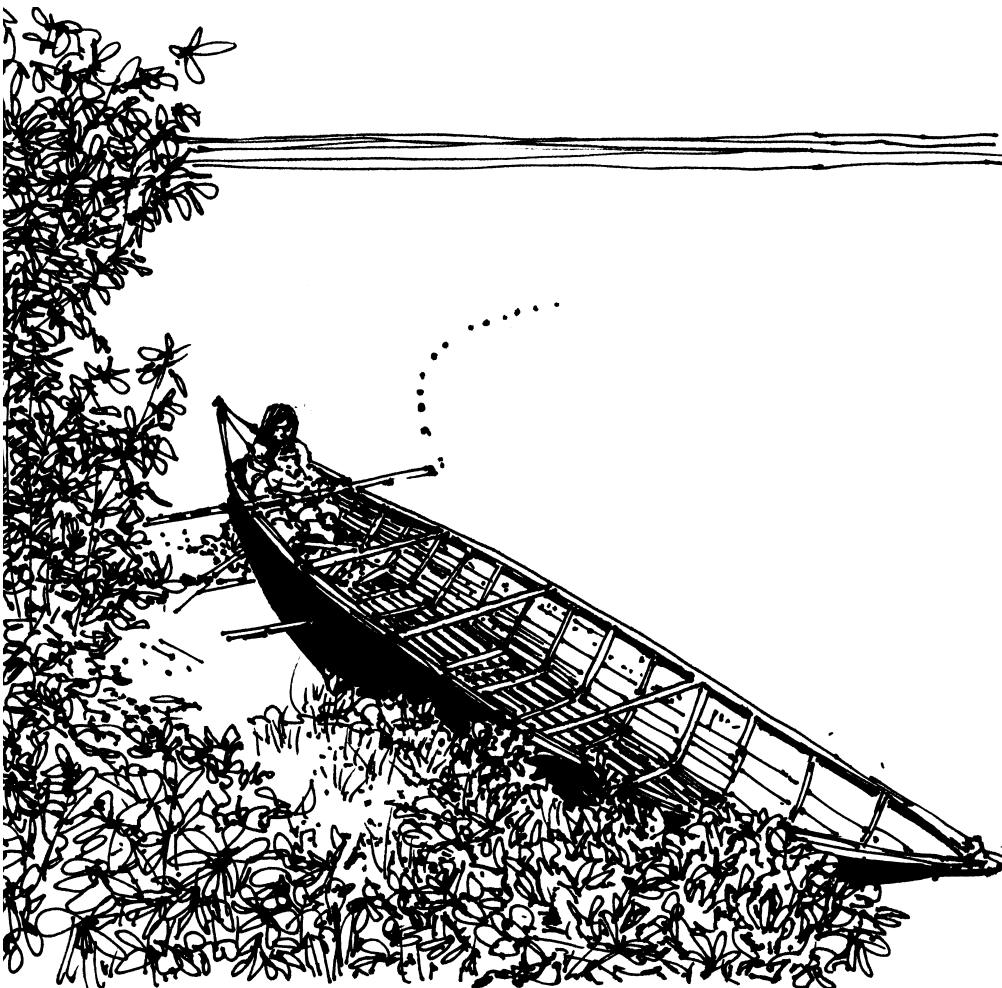


Public Comments and Response to Public Comments



3.0 PUBLIC COMMENTS AND RESPONSE TO PUBLIC COMMENTS

This section contains the letters of comment received on the Draft EIS, and the response to comments. One element of the response to comments was to revise the DEIS circulated for public comment in April 2004, to add clarifications warranted by the comments, and/or to provide additional updated information. Changes made to the Draft EIS are summarized in Subsection 3.1. The letters of comment and response to comments are reproduced in full in Subsection 3.2.

3.1 Summary of Changes Made to the Draft Environmental Impact Statement

Table 3-1 summarizes key changes that were made to the Draft Environmental Impact Statement (DEIS) in response to public comment or as a result of updated information. The table summary does not identify all changes made; it describes changes in wording that affect content, intent, and explanations of commitments contained in the DEIS or in response to specific public comment. The most extensive changes were related to the discussion of Fish (Subsections 3.3 and 4.3) and Wildlife (3.8). Changes were also made for editorial reasons for purposes of clarification; these are not included in Table 3-1. The location of text modifications is denoted by subsection where the text appeared in the DEIS distributed for public comment (April 2004).

1 Table 3-1. Major changes made in Final EIS volume 2 in response to public comments received on the
2 Draft EIS: *Puget Sound Chinook Harvest Resource Management Plan (NMFS, April 2004)*.

DEIS Section	Page ¹	Response to Comment	Summary of Changes Made to the DEIS
1.1	1-1	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
1.2	1-3	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
1.4	1-4	EPA-13A	Include language explaining that an ESA Section 7 Biological Opinion had been conducted on the 2004 fishing season.
1.4	1-4	EPA-1	Clarify importance of Limit 6 criteria to the Purpose and Need for the Proposed Action.
1.4	1-4	EPA-13A	Revise language to note the revision of the settlement agreement between Washington Trout and NMFS to reflect the Section 7 consultation on the 2004 fishing season.
1.6 Recreational Fisheries	1-23	SW-28	Correct recreational chinook salmon catch numbers in text to correspond with Figure 1.6-4.
1.8.2	1-27	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
1.9	1-27	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
1.12	1-33	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
2.1	2-1	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
2.2	2-2	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
2.2.2	2-3	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
2.3.1	2-6	EPA-10	Revise language to clarify that the Proposed Action would manage mixed-stock fisheries for the harvest management objective of the weakest management unit in the fishery.
2.3.1	2-6	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
3.1	3-1	Workgroup	Clarify that document also addressed SEPA issues of relevance.
3.3.1.1	3-15	EPA-8	Provide a broader overview of habitat activities affecting listed salmon in Puget Sound.
3.3.5	3-81	Workgroup	Update information on derelict fishing gear removal in Puget Sound.
3.3.6	3-82	Workgroup	Update references and add more discussion on terrestrial effects.
3.7.3	3-155	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
3.7.5	3-156	EPA-16	Correct calculation of minority representation by county in Table 3.7-2.
3.8.1	3-160	Workgroup	Update text.
4.2.2	4-4	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
4.2.3	4-5	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
4.2.3.1	4-5	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
4.2.3.2	4-6	EPA-6	Delete language referencing Appendix B for details on Canadian fishing regimes and the basis of the maximum northern fisheries scenario. This information is included in Subsections 1.6 and 4.2 of the DEIS.
4.2.3.2	4-6	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.

¹ Page number found in public review draft of the EIS, dated April 2004.

Section 3 – Public Comments and Response to Public Comments

DEIS Section	Page ¹	Response to Comment	Summary of Changes Made to the DEIS
4.3.1.1 Impacts to Hood Canal and Strait of Juan de Fuca Summer Chum	4-9	Workgroup	Correct escapement figures in text and Tables 4.3-7a through 4.3-7d.
4.3.1.2 Impacts to Hood Canal and Strait of Juan de Fuca Summer Chum	4-21	Workgroup	Correct comparison of Alternative 2 to Alternative (Scenario B) corrected in text and Tables 4.3-8a through 4.3-8d.
4.3.1.3	4-24	Workgroup	Catch figures corrected in text and Tables 4.3-9a through 4.3-9d.
4.3.1.3	4-24	Workgroup	Correct Alternative 3 comparison to Alternative (Scenario B) in text and Tables 4.3-9a through 4.3-9d.
4.3.1.4	4-27	Workgroup	Correct catch figures corrected in text and Tables 4.3-10a through 4.3-10d.
4.3.6	4-76	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
4.3.6.1	4-77	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
4.3.6.2	4-81	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
4.3.6.3	4-83	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
4.3.7.1	4-84	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
4.3.8.1	4-100	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
4.3.8.1	4-100	SW-15, 16, 32, WT-32	Expand discussion to provide more detail on the robustness of the different alternatives to management error.
4.6	4-131	SW-7	Information is insufficient to assess economic effects of potential delay in recovery of some Puget Sound Chinook populations.
4.6	4-131	NFS-12	Information is insufficient to assess the potential effects of implementing the different alternatives on non-use values.
4.8.1	4-182	Workgroup	Expand description on effects of derelict fishing gear.
4.8.2.2	4-189	Workgroup	Update text.
4.8.3	4-190	Workgroup	Expand description on effects of derelict fishing gear.
4.8.4.1	4-193	Workgroup	Add reference to biological opinions and incidental take permits for marbled murrelets for Puget Sound salmon fisheries.
4.8.5	4-194	Workgroup	Identify several terrestrial wildlife species with strong consistent links to salmon as prey species.
4.9	4-206	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
5.1	5-2	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
5.2.2	5-10	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.
Appendix C2	C-5	EPA-8	Add explanation for how harvest standards change with changing environmental conditions.
Appendix C3	C-15	EPA-13A	Change duration of Proposed Action from 2004–2009 to 2005–2009.

1 ¹ Page number found in public review draft of the EIS, dated April 2004.

3.2 Letters of Comment and Responses

NMFS received five letters of comment on the Puget Sound Chinook Harvest Resource Management Plan Draft EIS (April 2004): one from a government agency, three from public organizations, and one from an individual.

Each letter of comment and attachments (if any) are reproduced in this subsection, along with responses prepared by NMFS and/or appropriate resource specialists. For clarity in associating responses with specific comments, numbers have been applied in the margins of each letter of comment, delineating the paragraph or portion of a paragraph for which a response was prepared. All responses follow each letter of comment, numbered to correspond to these margin numbers.

Sam Wright (SW)

Letter of Comment

To: Susan Bishop, Fisheries Management Branch, Northwest Region - Sustainable Fisheries Division, NOAA's National Marine Fisheries Service, 7600 Sand Point Way NE, Seattle, WA, 98115-0070

From: Sam Wright

Subject: Response to: Draft Environmental Impact Statement (DEIS), Puget Sound Chinook Harvest Resource Management Plan, April 2004.

The only logical way for me to respond to the DEIS and its Appendices is by developing and describing a new viable alternative, herein called **Alternative 1A**, which falls between Alternatives 1 and 2 in the DEIS. It is my understanding that a new approach can be given serious consideration as long as it falls *within* the range of alternatives presented in the DEIS. Alternatives 2, 3, and 4 were clearly unacceptable before they were even analyzed. Alternative 1A has a fundamental difference from all of the alternatives in the DEIS in that active management attention would be directed toward each brood year or cohort of each chinook population beginning at age two - when significant fishing-related mortality begins (See No. 10). The affirmation of treaty Indian fishing rights for salmon and steelhead in 1974 required fisheries managers to quantify basis for their decisions. This initially led to improved resource stewardship when meeting spawning ground escapement objectives was accorded highest priority. However, failure followed, beginning in the early 1980s, for salmon resources as providing fisheries replaced attainment of escapement goals as a fisheries management planning priority. In the case of Puget Sound chinook, this change in priority played a huge role in creating a basis for listing under the Endangered Species Act (ESA). Alternative 1 continues with this same misplaced priority and relies on very suspect theoretical models to justify a pre-conceived desired suite of fisheries. It is well known within the fisheries profession that the types of models involved require too many tenuous assumptions to be of any real value and thus can be easily manipulated to "justify" almost anything. In the current DEIS, it is repeatedly shown that it does not matter in the long term whether thousands of salmon are caught or allowed to escape to the spawning grounds. Logic is completely missing. In addition, the chinook spawning escapements observed in many areas in 2003 were unique in that returning 3- and 4-year-old hatchery fish were adipose marked for the first time. In many key areas, the percentages of hatchery fish were much higher than had been estimated by anyone in the past. Thus, critical assumptions in your planning effort about both abundance and productivity of wild fish are now simply obsolete, including many of the adult-to-adult spawner-recruit relationships for natural spawners. For example, 70% of the female chinook returning to the new fish passage facilities on the Cedar river in 2003 were marked hatchery fish. When the Habitat Conservation Plan (HCP) was developed for the Cedar River, the possible presence of significant numbers of hatchery fish was not even raised as an issue (the DEIS also assumes wild fish only). No 2003 escapement information for any area is even presented or considered in the document. Alternative 1A is based upon a foundation of sound fisheries management principles that have a proven track record of success when applied correctly in the past and current management of Pacific Coast salmon populations. In contrast, Alternative 1 evolves from a foundation of "policy" (i.e., political) decisions. The two primary principles that form the cornerstone of Alternative 1A are as follows:

Incidental Puget Sound Chinook Catch Principle

The take of listed Puget Sound chinook pursuant to the targeted harvesting of surplus production from other salmonid resources will have a net benefit (chinook bycatch plus other species) that will significantly exceed the future benefits that would be derived if the same listed chinook were allowed to escape and spawn naturally. Valid incidental catches would include listed Puget Sound chinook taken as non-catch mortality associated with harvesting adipose-marked unlisted Puget Sound chinook.

Curtailement of Directed Puget Sound Chinook Harvest Principle

If listed chinook needed to meet a valid spawning escapement objective (generally defined as the "upper thresholds" in state-tribal planning) are allowed to escape and spawn naturally, the net benefits derived from their progeny will, on average, be significantly greater than if the same fish had been immediately harvested.

In Alternative 1A, both of these principles would be applied consistently to *management unit escapement objectives*, not objectives for individual populations (when they differ). The only two possible fisheries management responses to these two principles would be as follows for each defined population: (1) If listed Puget Sound chinook are predicted to exist in U.S. waters to meet a specific spawning escapement objective, then all fisheries would be managed to meet or exceed that objective; or (2) if listed Puget Sound chinook are not predicted to exist in U.S. waters to meet a specific objective, then all fisheries would be managed for only incidental, non-targeted impacts. These would include needs for valid test fisheries and critical ceremonial, subsistence and research (test fishing) uses.

The basic approach under Alternative 1A would be similar to that described in the WDFW Wild Salmonid Policy FEIS. However, instead of a fixed 10% limitation on incidental catches in Washington fisheries, the allowance would be the total from valid incidental catches. This eliminates potential problems when the total incidental catch needs might be slightly above or below 10% (including differences during odd-year pink salmon runs). In the absence of a specific percentage limitation, there will be more potential for abuse of the incidental catch principle. Each proposed incidental catch need will require close scrutiny to insure its validity.

Differences Between Alternative 1 and Alternative 1A

The primary difference between the two alternatives is that Alternative 1 would allow planned, deliberate overfishing of listed Puget Sound chinook in clearly targeted fisheries. These are defined by the co-managers as any chinook fisheries where less than 50% of the total catch comes from listed populations with no harvestable surpluses (or, alternatively, where a certain estimated exploitation rate is not exceeded). Alternative 1A would not allow these particular types of fisheries or anything close to it. There can be no question that Alternative 1 would at best *delay* and at worst *prevent* chinook populations from ever reaching Viable Population Escapements - in spite of what "models" in the DEIS claim to show. There would be a difference if thousands of additional chinook are allowed to be caught. This would, in turn, significantly delay or prevent the de-listing of Puget Sound chinook, a supposed (stated) primary objective of NOAA Fisheries. Since the ESA listing has significantly increased the costs of doing business for both private businesses and public agencies, a deliberate delay will cause tremendous economic losses to both taxpayers and consumers. These costs will need to be analyzed and presented in the FEIS.

The other major difference between Alternative 1 and Alternative 1A is that the latter does not rely for its success on a number of very tenuous assumptions, many of which are necessary for Alternative 1 to be successful on a sustainable basis. These are as follows:

- (1) The "Lower NMFS' Derived Thresholds" or "Critical (Low) Abundance Thresholds" inspire a false sense of security since it is believed that any chinook population will always be able to recover if it is kept at or above these levels. This is one of the reasons that Alternative 1 allows targeted chinook fisheries or planned overfishing when returns are below the Viable Population Escapement levels. The various Critical numbers are consistently portrayed as fully accounting for the possibility of compensatory mortality or depensation. Liermann and Hilborn (1997:1976) give examples such as "predator pits, reduced reproductive success, impaired aggregation, conditioning of the environment, efficiency of food location, and inbreeding." (Liermann, M., and R. Hilborn. 1997. Depensation in fish stocks: a hierarchic Bayesian meta-analysis. *Can. J. Fish. Aquat. Sci.* 54:1976-1984.) Depensation is also referred to as inverse density-dependence or the Allee effect (Myers et al. 1995) but the latter term is only a sub-part of depensation (Myers, R.A., N.J. Barrowman, J.A. Hutchings, and A.A. Rosenberg. 1995. Population dynamics of exploited fish stocks at low population levels. *Science* 269:1106-1108.). Mechanisms underlying Allee effects are limited to physiological and behavioral causes (Frank, K.T., and D. Brickman. 2000. Allee effects and compensatory population dynamics within a stock complex. *Can. J. Fish. Aquat. Sci.* 57:513-517.) The empirical evidence on Pacific salmon populations shows that compensatory mortality can be manifested at population sizes significantly larger than the relatively small Critical numbers currently being used by NOAA Fisheries for Puget Sound chinook (Liermann and Hilborn 1997; Myers et al. 1995. Peterman, R.M. 1977. A simple mechanism that causes collapsing stability regions in exploited salmonid populations. *J. Fish. Res. Bd. Can.* 34:1130-1142.

Peterman, R.M. 1987. Review of the components of recruitment of Pacific salmon. Am. Fish. Soc. Symposium 1:417-429. Ricker, W.E. 1973. Two mechanisms that make it impossible to maintain peak-period yields from stocks of Pacific salmon and other fishes. J. Fish. Res. Bd. Can. 30:1275-1286.). It seems obvious that NOAA Fisheries is, at best, only accounting for the Allee effects sub-set (with numbers as low as 200) and not all potential elements of depensation. If these numbers are used, then 3-year-old females should be deleted from the totals (See No. 8). In addition, any such "critical" numbers should be expressed as numbers of females four years or older. The "normal" wild fish escapement in the Skagit river is 55% males (excluding jacks) but the 3-year-old component is sizable in rivers with large numbers of hatchery fish (everywhere except the Skagit) and is composed of about 70% males (Note: The point is to correct for the anomalous spawning population caused by the presence of hatchery fish. For example, 200 fish would become 100 females age 4 or older. The above would be an acceptable variation for Alternative 1A).

- (2) The relatively successful use of Alternative 1 in three recent years (2001-2003) was achieved when the independent variables of freshwater and marine survival were both clearly above average (egg to smolt and smolt to adult survival rates, respectively). Since each of these two independent variables has the possibility of being above or below average, the current situation might be expected 25% of the time. Even a poorly conceived system can give the illusion of success during such a brief period. In addition, there have been several recent years in which Canadian fisheries have not harvested chinook at levels allowed under the Pacific Salmon Treaty due to internal Canadian conservation issues. The only long-term data series for egg to smolt survival rates for Puget Sound chinook comes from the Skagit River (Seiler, D., S. Neuhauser, and L. Kishimoto. 2002. Annual Report. 2001 Skagit River wild 0+ chinook production evaluation. Report No. FPA02-11. WDFW, Olympia, WA. and Dave Seiler, WDFW, personal communication). The egg to smolt survival rate has not been severely depressed by high flood flows since the 1995 brood year, which had a survival rate of only 3.8 percent. Since then, the survival rates for the next seven brood years (1996 to 2002) have ranged from 10.8 to 16.5%. The Hare et al. (1999) reference is frequently cited to claim that marine survival of Puget Sound chinook will be above average for an extended period of time. However, the same reference (Hare et al. 1999:12) concedes that "interannual variability appears to be more pronounced, in relation to interdecadal variability, in chinook and chum." Their supposed relationship for Pacific salmon is really a relationship for and driven by data from pink, sockeye, and coho salmon. Other scientists examining ocean survival have used a similar data base as Hare et al. (1999) and their published results reflect these same problems.
- (3) The "Rebuilding Exploitation Rates" or "Recovery Exploitation Rate Ceilings" that are critical to the success of Alternative 1 (but not 1A) are generally based on exploitation rates observed in the late 1990's that resulted in stable or increasing spawning escapements. However, as described in No. 2 above, the late 1990's had a fortuitous combination of above average freshwater and marine survival rates as well as reduced Canadian fishing pressure.

Computation of these rates also involved many uses of questionable data. All of the CWT data for Puget Sound chinook come from hatchery fish and these data are used as surrogates for the expected behavior of wild fish. In a number of cases these hatchery fish are not even from the same river basin. Non-indigenous Samish River hatchery fish are used to represent the largest resource in the ESU - Skagit River summer-fall chinook. The former mainly move north through Georgia Strait after being released while most of the Skagit fish probably migrate out through Juan de Fuca Strait. Stillaguamish hatchery fish are used to represent Snohomish system summer and fall chinook populations although the latter are the only summer-fall runs in the ESU with a sizeable component of yearling migrants as well as a higher percentage of 5-year-old adults (about 25%). Other substitutions involve two Lake Washington populations, mid-Hood Canal tributaries, and the Puyallup, Nisqually and Elwha rivers (the Hoko River is used for the latter and is not even in the ESU). Nothing is modeled for the Dungeness River. The only places in Washington with usable CWT data for wild chinook are the Lewis River and the Hanford Reach. In each case, both the catch (ocean) distribution and exploitation rate are significantly different from hatchery fish in the same area (WDFW. 1992. 1992

Washington State salmon and steelhead stock inventory. Appendix Three. Columbia River stocks. WDFW, Olympia, WA.). In addition, most of the CWT data from earlier years had incomplete spawning escapements which artificially inflated the perceived exploitation rates. There have been greater efforts in recent years to get complete escapement data. However, the calculated declines in exploitation rates present an unknown mixture of real declines and false declines caused by incomplete escapement data.

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- (4) Different fisheries management strategies have been debated for decades and the central points of this debate are described as follows by Frederick and Peterman (1995:301): "Many have discussed the apparent conflict between a constant escapement policy (usually characterized by a high average harvest but also high interannual variability in harvests) and a constant harvest rate policy (usually associated with lower average harvests but also lower harvest variability) (e.g., Ricker 1958; Allen 1973; Gatto and Rinaldi 1976; Hall et al. 1988; Quinn et al. 1999). Although this is an accurate characterization of the two policies for stocks that are optimally managed with perfect information, it does not necessarily apply where there is observation error in stock abundance" (Frederick, S.W., and R.M. Peterman. 1995. Choosing fisheries harvest policies: when does uncertainty matter? *Can. J. Fish. and Aquat. Sci.* 52:291-306.). In managing Puget Sound salmon fisheries, the "uncertainty" is typically over correct spawning escapement objectives. This is used by some scientists as a basis for exploitation rate management as a "probing" element of the Adaptive Management Concept. Their rationale is that ranges of spawning escapements will eventually produce answers to the questions of correct spawning escapement objectives. They also claim that managing every year for a fixed numerical escapement goal will not produce the needed range of escapements. Three major Puget Sound chinook populations have been managed for fixed escapement goals for the past six years (1997-2002) - Green River (5800 natural spawners), Nisqually River (1100 natural spawners), and Skokomish River (3650 natural spawners). During the six year period, annual spawning escapements ranged from 6170 to 13950 in the Green River, from 340 to 1542 in the Nisqually River, and from 1479 to 10729 in the Skokomish River. This is sufficient range for any conceivable spawner-recruit analysis. It appears that the co-managers definitely favor year-to-year fisheries stability over higher yields but, in this particular ESA-listed case, there are tremendous economic costs associated with the delayed resource recovery which this choice mandates.

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- (5) The information presented above is also a good example of the tremendous imprecision in the actual fisheries management processes. Only the Green River met the objective of meeting or exceeding the escapement goal despite active terminal area management. This is what you can get in practice when you are managing for specific quantitative objectives, whether it is numbers of fish or desired exploitation rates. The narrative in the DEIS gives the illusion that use of rates gives more management precision but this is for the rates themselves, not the resultant numbers of fish. With this tremendous imprecision in the management processes, you do not want to base your system on quantitative values that have their own high degrees of imprecision. This is one of the best advantages of Alternative 1A over Alternative 1. In Alternative 1A, the only values with a significant degree of present uncertainty are the spawning escapement objective numbers. These will quickly improve as adequate time series of chinook smolt trapping data become available for most major river systems. The eventual success in managing Puget Sound chinook will have to come from an ability to compare numbers and sizes of female spawners with their resultant smolt production. Adult-to-adult relationships will always have too much variability to be of any real value. They cannot separate the independent variables of freshwater and marine survival, the percentages and sizes of females vary from year to year (changing the spawning capabilities and egg totals), and accurate catch statistics specific to each cohort cannot be obtained (as can be done when managing sockeye, chum or steelhead populations that are only harvested in terminal areas). The science of adult spawner-recruit analysis mandates that accurate statistics for both total catch and total escapement must be available for each specific brood year or cohort. It is not acceptable to use averages or estimated fishing rates. Alternative 1 has the same weakness plus two additional weaknesses - the needs for both critical population numbers and rebuilding

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exploitation rates. There is simply too much uncertainty to allow a significant degree of planned, deliberate overfishing. Enough will happen by accident from the inherent imprecision of the management planning process.

- (6) The same problem with adult-to-adult relationships carries over to all of the attempts to determine current watershed productivity. Computerized theoretical habitat modeling with countless assumptions (Ecosystems Diagnosis Treatment methodology or EDT Method) is a poor substitute when you can get your answers directly and without assumptions from real fish numbers. The Skagit River juvenile production data provide the only accurate basis for determining current watershed productivity. It is the only place in Puget Sound where chinook freshwater survival can be isolated and determined for an extended period of time. The system has produced 5.0 to 6.4 million ocean-type migrants annually from four recent brood years (1998, 2000, 2001, and 2002) with adult escapements ranging from 15.6 to 20.7 thousand. Seven other brood years (1991-94, 1996-97, and 1999) were not seriously impacted by high peak flood flows during egg incubation but production was markedly less - 1.5 to 4.5 million smolts from escapements of 5.4 to 11.7 thousand adults. The only possible conclusions that can be drawn from these data are that (1) the system has a current capability of producing 5 to 6 million out-migrants, and (2) the adult spawning escapements were inadequate for those recent brood years with less smolt production. There is a solid empirical basis for both production capabilities and a spawning escapement objective.
- (7) The DEIS mistakenly treats Canadian interceptions of Puget chinook as only a "given" that must be accounted for in the management planning process. In reality, the salmon treaty with Canada reflects results of a conscious, negotiated exchange of U.S. and Canadian origin salmon. Some of the anticipated surplus production from Puget Sound chinook was traded away to secure continued treaty Indian fishing opportunities on salmon originating in Canada. None of this reality is reflected in any of the analyses contained in the DEIS. The existing quantitative population statistics clearly indicate that most or all of the potential surplus production was in fact traded away to Canada for a number of Puget Sound chinook populations. In the case of severely depressed populations, it appears that the U.S. government traded away surplus production that does not even exist. At the heart of this problem is an erroneous assumption that each chinook population has the inherent capability to produce a large increment of surplus production, at least under improved habitat conditions. However, salmon populations that persist over time do not automatically have an inherent ability to produce significant surplus production for harvest, regardless of habitat conditions. Ricker (1973) estimated that about 30% of the original salmon populations were driven to extinction soon after the advent of significant commercial fishing - they had minimal or no ability to produce surplus production for harvest. This original 30% is long gone but habitat degradation has produced a new group of populations with the same predicament (little or no surplus production capabilities). Since the DEIS correctly concedes that average recruits per spawner will likely decline with higher population sizes due to density dependent factors, there is no quick way out of this trap. The "trap" is that there will be no chance to even change Canadian and Alaskan interceptions until at least 2010 and the needed habitat improvements involve a time scale of decades. Alternative 1A, by being more conservative, is clearly superior to Alternative 1 for these particular populations since it limits any U.S. impacts to only incidental catch mortality until there is a chance to modify the treaty with Canada. Alternative 1 is concerned mainly with building a justification for preservation of the entire ESU even if these particular populations are allowed to go extinct.
- (8) The DEIS perpetuates the erroneous assumption that there has never been any significant change in size and age structure of Puget Sound chinook populations. However, a century of massive hatchery releases and selective fishing regimes against older fish, females, and larger individual of the same age class have caused important changes that need to be acknowledged. Gilbert (1912:64) reports as follows: "From salt-water in Puget Sound, we have secured immature third-year fish, both males and females, *and also matured third-year males*, taken by purse-seines from the same school, and both feeding voraciously and equally on small sand lance and young herring. There was no difference in size between the mature and immature

individuals, nor could they be externally distinguished, unless by a certain distension of the abdomen in mature specimens, due to the developed testes. It became evident from our observations: (1) that a very small proportion of the males of given year develop precociously; (2) that precocity is apparently not caused by the influence of peculiar external conditions operating upon the individuals thus affected, but by some unknown factor; (3) that precocious development does not stunt the growth. *No mature female king salmon less than four years old have thus far been encountered.*" (emphasis added) (Gilbert, C.H. 1912. Age at maturity of Pacific coast salmon of the genus *Oncorhynchus*. Bulletin U.S. Fish Commission 32:57-70.) Doubters may attempt to dismiss this early work with a claim of inadequate sampling but it is important to note that the same author (Gilbert 1912) documented the presence of significant numbers of mature 3-year-old female chinook in California and in the Columbia River system. Major hatchery programs had already been established in both areas prior to the time of sampling. It does not appear that any reliance should be placed on third-year females for the recovery of Puget Sound chinook since this particular life history strategy failed to be successful in centuries of evolution. If the strategy could not be successful under natural habitat conditions, it is certainly not going to be viable in this era of dramatic increases in both the frequency and amplitude of flood events. Again, Alternative 1A is superior to Alternative 1 since it represents a much more conservative approach to resource management. Three-year-old females are not currently a significant part of the reproductive element in the Skagit River (according to your personal communication from Bob Hayman) and this is the only river basin in Puget Sound where wild fish are not overwhelmed by hatchery fish as both juveniles and adult spawners. Under Alternative 1A, three-year-old females would not be used in any calculations, "Critical" numbers or assumptions involving spawning adults (Note: In managing steelhead, 3-year-old hatchery-origin females are commonly excluded from spawner-recruit relationships. In addition, I conducted many spawning ground surveys on Washington coastal rivers without hatcheries in the 1960s and early 1970s. All of our chinook counts were separated into jacks, adults (4-, 5- and 6-year-olds) and 3-year-old males - that were obviously smaller than adults but much bigger than jacks. Small 3-year-old females were not seen.)

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- (9) The DEIS mistakenly describes the chinook populations in the Lake Washington system as not being of any critical importance since the same life history strategy is found in other South Puget Sound river systems. This is incorrect since these populations are the only members of the entire ESU that have extended juvenile rearing in lake habitats (Lake Washington and Lake Sammamish). The large numbers of marked hatchery fish observed in the Cedar River (at the southern end of Lake Washington) in 2003 suggests that homing fidelity is primarily to the lake systems rather than to individual tributaries (hatchery chinook are not planted in the Cedar River). This is clearly a unique life history strategy that needs to be preserved. In addition, the HCP for the upper Cedar River creates the only large no-logging preserve for chinook salmon in the entire Puget Sound basin. Alternative 1A would provide greater protection to Lake Washington chinook populations than Alternative 1.

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- (10) The Skagit River chinook enjoyed a very fortunate string of seven consecutive brood years (1996-2002) in which incubating eggs were not seriously impacted by high flood flows. However, this lucky streak came to an end in late October of 2003 when many river systems in the Puget Sound basin were hit by record or near record floods. Many chinook populations had their peak of spawning activity prior to this extreme flooding and egg to fry survival rates can be expected to approach zero (as was the case for the 1990 chinook brood year in the Skagit River when the egg to migrant survival rate sank to 1.2%). Early 2004 counts of the 2003 brood year survivors indicate that the production will only be about 10% of the 5 to 6 million smolts that the river is capable of producing (Dave Seiler, WDFW, personal communication). In addition, the reduced production will be skewed to progeny from fish that spawned after the flooding and run timing is an inherited trait. The best the DEIS modeling did was to evaluate a 30% decline from the above average chinook abundance observed in 2003. Under Alternative 1, fish from the 2003 brood year will be subjected to normal exploitation rate management procedures and only the mature members of the cohort would be actively managed. The DEIS discusses a number of "special precautions" that will be taken

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with extremely low runs but there is no showing anywhere in the DEIS that poor runs can be accurately predicted in advance of significant fishing mortality taking place. Most of the populations have the majority of their females maturing at age four. These fish from the 2003 brood year will not even receive management attention until 2007 under Alternative 1. However, significant fishing-related mortality on these females will occur in both 2005 and 2006. Under Alternative 1A, needed protection would begin as early as 2005 in more restrictive management of the Puget Sound recreational salmon fisheries (where immature 2-year-old fish often provide a majority of the catch). This would also provide additional protection to those members of the 2002 brood year destined to mature as 5-year-old females in 2007. Important, usable information on ocean-type smolt production from the 2003 brood year will be available by the end of 2004. The burden of proof should be on showing that surplus production exists for harvest before targeted, non-selective chinook fisheries are allowed. The same fatal flaw described above for Alternative 1 will apply to all brood years (weak and strong) for all Puget Sound chinook populations managed throughout the tenure of the EIS.

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- (11) It is clear from the content of the DEIS that NOAA Fisheries has modified their policy position with respect to the role of hatchery fish in the Puget Sound chinook ESU. At the time of listing, hatchery fish were clearly identified as one of the primary causes for listing and a whole series of detailed adverse impacts from hatchery fish were described in the listing decision documents. At the same time, five hatchery stocks were also listed and deemed essential to recovery of the ESU. Until recently, all of the unlisted hatchery stocks were considered to have all of the same adverse impacts identified at the time of listing. The current DEIS is a marked departure in that all hatchery stocks, listed and unlisted, are now considered to have significant beneficial elements. The listed North Fork Nooksack hatchery stock is now considered beneficial when it strays into the South Fork Nooksack even though the latter has a genetically distinct chinook population. The same situation occurs in the North and South Forks of the Stillaguamish River, although straying has not been quantified. Unlisted hatchery chinook stocks are considered to be a distinct benefit when they spawn with wild fish in the Skykomish River, in northern Lake Washington tributaries, and in mid-Hood Canal tributaries. Except for the Skagit River, hatchery chinook dominate wild fish in every river system within the Puget Sound ESU (the hatchery releases are at least two times - Stillaguamish - and as much as 40 times - Skokomish - the estimated wild smolt production). However, they are never even mentioned in the DEIS as a possible reason for certain wild populations not achieving their expected progress toward recovery. NOAA Fisheries may have a new policy with respect to hatchery fish but it is clearly at odds with the best available science and this distinction should be spelled out in the FEIS. Under Alternative 1A, the role of hatchery fish in recovery would remain consistent with that described at the time of listing. In addition, new evidence on the adverse impacts of hatchery fish would be added. For example, it was recently determined that chinook natural spawners in several Canadian rivers with hatchery fish had reduce egg sizes and thus reduced reproductive fitness (Heath, D.D., J.W. Heath, C.A. Bryden, R.M. Johnson, and C.W. Fox. 2003. Rapid evolution of egg size in captive salmon. Science (299):1738-1740.)

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- (12) It is also evident in the DEIS that NOAA Fisheries is willing to sacrifice a significant number of Puget Sound chinook population if necessary to provide continued, planned, deliberate overfishing. This policy decision could eventually evolve to a point where only one population is deemed essential to perpetuate the ESU. There are currently several listed ESUs with only a single population and there are no firm guidelines of any type as to the minimum number or percentage of populations that should be preserved in a multiple population ESU. Alternative 1A would give equal high priority to all Category 1 and 2 populations - a significant number of populations have already been lost. I hate to think what will happen to the resource if development interests (the people who legally challenge your ESA listings) stumble upon the NOAA Fisheries new policy decisions spelled out in the DEIS.

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- (13) A basic assumption in the DEIS is that marine survival is the primary influence on overall survival (See Executive Summary, page iv). This is simply incorrect. In 14 years of record,

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the egg to smolt survival rate in the Skagit River ranged from 1.2 to 16.7%, which is nearly a 14 fold difference. There is nothing to indicate that marine survival can vary by over 14 times. This erroneous assumption led to evaluating impacts of Alternatives on chinook abundance that ranged from the 2003 abundance level (clearly well above average) to a 30% reduction in that abundance (probably slightly above average to average). We now know that most of the eggs deposited by the 2003 brood year chinook spawners were either blown out of the gravel or smothered by silt during record to near record floods that occurred in late October 2003.

The entire analysis in the DEIS has already become obsolete for the 6-year period in question.

- (14) There are a number of key technical errors in the DEIS that cast doubt on the entire body of quantitative analysis work. For example, Table 1.6-1 on page 1-22 shows an "incidental" chinook catch of 29,592 fish taken in 1997. Catches in six other adjacent years (1995-96, 1998-2001) only ranged from 3 to 5,321. It is well known that a major directed fishery for chinook occurred in 1997. If this huge number is part of your data base as an incidental catch, any analysis results will be distorted. The "less than 5,000 chinook" sport catch cited on page 1-23 does not mesh with the scale in Figure 1-24 (less than 50,000). Bigler et al. (1996) determined that 45 of 47 salmon "populations" examined decreased in average body size (see page 3-90) but both of their exceptions were with chinook. One was the British Columbia troll fishery, the primary interceptor of Puget Sound chinook. The apparent size increase appeared to be an artifact of increasing the minimum size limit from 26 to 28 inches during the time series examined. Four of the five chinook populations examined outside of Alaska were the commercial troll fisheries of California, Oregon, Washington and British Columbia. These were all poor choices for analysis due to changes in regulations and timing of the fisheries. The attempt by Myers et al. (1998) to estimate Puget Sound chinook production at the beginning of the 20th Century is supported by the DEIS despite the inclusion of a large increment of Canadian fish and a failure to pay any attention to the two important mechanisms described by Ricker (1973).

- (15) The narrative of the DEIS contains many contradictions. For example, the narrative on pages 2-9 and 2-10 seems to indicate that some key elements of Alternatives 1 and 1A are identical. However, this DEIS narrative is in direct contradiction to a stated principle that chinook fisheries may be allowed whenever less than 50% of the population being impacted is from listed populations that are not expected to be able to meet their spawning escapement objectives. It is also stated that targeted chinook fisheries can be allowed if the Rebuilding Exploitation Rates (RERs) are not exceeded. These are three very different management standards and, in addition, the various numbers associated with each standard often change with each new management report. There are also "critical" numbers and the different management standards associated with them. These also change frequently with each new report. For example, the Dosewallips River was a defined population in the previous report but it has now been combined with the Duckabush and Hamma Hamma rivers. The large number of hatchery fish returning to the Hamma Hamma have conveniently "solved" a former critical numbers problem with the Dosewallips alone. Part of the confusion comes from a complicated mixture of specific management standards versus stated co-manager intents. The co-managers will be under intense pressure from fishermen to provide the maximum amount of fishing opportunity that the FEIS allows. You will be doing them (and the resource) a favor by stating firm, unambiguous fisheries management standards such as described in Alternative 1A. It is unrealistic to expect that five subsequent annual fishing plans will be decidedly more conservative than allowed in the FEIS. Alternative 1 has far too many loopholes that will be exploited. Your analysis of the 6-year outcome is simply unrealistic.

- (16) In summary, Alternative 1 is a classic example of what is called "forcing". Since the DEIS admits that Alternative 1 is a mixture of "policy" and science, the beginning point or given in the planning process must have been a list of "sacred cow" directed chinook fisheries that needed to be provided every year. A very complex management framework was then designed to give the illusion of adequately protecting the resource while still allowing these same fisheries to continue. It is obvious that no one really checked on actual data availability before this elaborate system was selected. This was followed by a great deal of "scrambling around"

in an attempt to fill in the extensive data requirements of the chosen system. In some cases, appropriate data were available but the norm was simply forcing numbers to be created. Only a few examples were mentioned in my prior comments - such as using Samish hatchery fish to simulate Skagit summer-fall wild fish - but there are literally hundreds of forced numbers employed in Alternative 1. The DEIS even concedes that the "data base" needed is far from complete and that much more forcing needs to be done. In the absence of the initial list of required fisheries, the management system that evolved would probably have been very similar to Alternative 1A, which is essentially the management framework described in the FEIS for the WDFW Wild Salmonid Policy. No forcing would have ever been required.

RESPONSE TO COMMENTS RECEIVED FROM SAM WRIGHT (SW)

SW-1A-1I.

The commentor proposed to present a new alternative, “Alternative 1A”, for comparison to DEIS Alternative 1. However, the commentor did not provide the detailed information necessary to analyze the new alternative, such as: 1) a description of Alternative 1A; or 2) a list of the features (objectives, implementation steps, criteria, etc.) of Alternative 1A. He has, however, provided some description of general components of Alternative 1A throughout his letter of comment. NMFS has identified these comments as components to the suggested alternative, and provided responses here for ease of understanding. Given the following information, NMFS concludes that the suggested alternative (Alternative 1A) is not technically feasible to evaluate or implement within the available time of the Proposed Action.

SW-1A

The primary fishery impact assessment tool used for Puget Sound Chinook is the Fishery Regulation Assessment Model (FRAM). The FRAM estimates fishery-related mortality on two-year-old to five-year-old fish in a single fishing year (May – April) associated with coastal Washington and Puget Sound marine and freshwater fisheries, and fisheries in Alaska and British Columbia. FRAM assesses the fishing mortality on several age classes in a single fishing year. Brood year or cohort-based models generally account for fishing mortality on a single-year class over four or five fishing years. FRAM is designed to inform annual pre-season harvest management planning. Brood-year models are usually used for post-season assessment of fishing mortality on a specific cohort. The fishery assessment model used by the Chinook Technical Committee (CTC) of the Pacific Salmon Commission has the ability to estimate exploitation rates on either a fishing-year or brood-year basis. Results from this model have shown that annual exploitation rates calculated from the fishing year model will be approximately equal to brood-year exploitation rates when averaged over the appropriate period. Modifying FRAM to calculate brood-year-based exploitation rates would benefit post-season analysis, but could easily take three or more years to complete the extensive rewriting of programming code, debugging and model-run trials needed. Therefore, the necessary modifications to the management tools probably would not be completed in time for implementation during the period of the Proposed Action (2005–2009). In addition, use of a brood-year-based FRAM in pre-season fishery assessment is limited because of the nature of the annual management process.

During the pre-season management process, forecasts for the abundance of age three- to five-year-old chinook salmon are developed as inputs to the FRAM. For some Puget Sound stocks such as Skagit

1 summer/fall chinook, these forecasts are age specific, for others they are based on an average assuming
2 that maturing fish are all four years old. Age specific forecasts are preferred, and are generally used
3 when historical data is adequate to do so. The age-specific forecasts can incorporate any abnormally
4 high or low production years. FRAM estimates fisheries mortality and escapement for the proposed
5 fisheries on each age class, from age 2 “jacks” to age three- to five-year-old adults. The number of age
6 three- to five-year adults projected to escape to the spawning grounds establishes the status of each
7 stock in a given fishery management year. If annual forecasts detect weak brood years, and, over time,
8 brood-year exploitation rates approximate fishing-year rates, and post season analysis can identify and
9 track weak brood years, there does not appear to be a clear benefit to moving to brood-year
10 management for annual planning, given the added management complexity and technical resources
11 required by such an approach.

12 **SW-1B**

13 The commentor provides no guidance regarding what an acceptable level of valid incidental catch
14 would be against which to evaluate the different alternatives (40 CFR 1503.3), or to assess whether it
15 would be consistent with the Purpose and Need for the Proposed Action. The magnitude of catch could
16 vary greatly from year to year, and may or may not be consistent with levels of harvest compatible with
17 the resource needs of individual Puget Sound Chinook populations.

18 **SW-1C**

19 Comment noted.

20 **SW-1D**

21 Comment noted. NMFS observes that the definition of valid incidental catches identified in this
22 comment differs from the definition under SW-1B, and there is no definition for what would constitute
23 a “valid test fishery” or “critical ceremonial, subsistence and research (test fishing) uses.” Also see the
24 response to SW-1B.

25 **SW-1E**

26 See response to comment SW-1B. It is explicitly stated in this comment that the commentor’s proposed
27 alternative does not define the limit of valid incidental catch, but that the limit would be whatever had
28 been determined to be the total of valid incidental catches for that year.

29 **SW-1F**

30 Since the sex ratio and the number of eggs per female (fecundity) differ by fish size and age, the
31 number of eggs in the gravel will differ depending on the age structure of the escapement. In Columbia

1 River wild chinook populations, females comprise about 10 to 15 percent of the three-year-old mature
2 run. Puget Sound wild Chinook probably have a similar low female contribution as maturing three year
3 olds. Historical spawning ground age composition and sex ratio information is lacking in many areas
4 and minimal in others. For many areas, it would be very speculative to convert historical spawning
5 ground estimates to numbers of fish by age and sex. Abnormally high or low survival years for any of
6 the age three- to five-year-old classes will influence the population status for that year, and to a degree,
7 the number of eggs laid. For example, poor production/survival for the 2003 brood year would begin to
8 influence the adult returns expected in the 2006 management year as three-year-old fish. However, if
9 three-year-old maturing adults were ignored in the spawning escapement estimate because of their low
10 female/egg contribution, then an abnormally low production year like 2003 would not be considered in
11 the stock status and fisheries assessment for 2006. (Also see comment and response to comment SW-
12 1A requesting brood-year-based management.) Of course, the converse could occur with a favorable
13 production year for returning three-year-old age-class. For a typical Puget Sound chinook salmon
14 population, the influence on the total adult return would likely be largest in 2007 as four-year-olds. The
15 modeling tools that have been developed, such as FRAM, and the management criteria that have been
16 established are dependent on the quality and resolution of the historical information. For annual pre-
17 season fisheries management, using estimates from FRAM of age three- to five-year-olds as a measure
18 of spawning escapement and stock status represents a compromise between the available historical
19 information and our understanding of Puget Sound chinook life histories and genetic diversity.

20 Also see responses to comments SW-9 and SW-18.

21 **SW-1G**

22 See response to comment SW-1F.

23 **SW-1H**

24 See response to comments SW-1A and SW-1F.

25 **SW-1I**

26 There is not enough detail provided in these comments to determine whether the implementation of
27 Alternative 1A (recommended by the commentor) would give equally-high priority or protection to all
28 Category 1 and 2 populations. Also see responses to comments SW-1B and SW-19.

29 Regardless of what criteria are used to measure stock status in any particular year, it is likely that at
30 least one Puget Sound chinook stock will not achieve its management unit escapement objectives
31 during the period of the Proposed Action (2005–2009). Under the Proposed Action (Alternative 1),

1 impacts to stocks in poorest or critical status are more constrained by managing for a critical
2 exploitation rate ceiling (CERC). The CERC was developed from modeling a minimum fishery regime
3 that represents the “minimum level of fishing that allows some exercise of those [treaty] rights, and
4 demonstrates their commitment to contribute... to the recovery of Puget Sound chinook salmon to
5 levels that would satisfy their treaty rights” and the allowance for some reasonable harvest of non-listed
6 salmon by Treaty Indian and non-Indian fishers (WDFW and PSIT 2004). The general approach in the
7 Proposed Action is to establish exploitation rates ceilings that correspond to varying stock status levels,
8 and allow the pre-season management process to determine the structure of the fisheries.

9 **SW-2**

10 The 2003 hatchery contribution data for the Cedar River escapement was unavailable at the time the
11 DEIS was written, and NMFS believes that a single year of data is insufficient on which to base
12 modeling assumptions. However, as more information is available, all the alternatives include adaptive
13 management provisions that would require revision of key parameters based on new information. The
14 lack of hatchery contribution to natural spawning estimates is still the case for the majority of Puget
15 Sound chinook salmon populations. Where sufficient information on abundance and productivity was
16 available to develop harvest standards (i.e., Nooksack early, Snohomish, Green River, Skagit and
17 Stillaguamish), NMFS used these standards to evaluate the environmental consequences of the
18 alternatives.

19 **SW-3**

20 The 2003 escapement information for Puget Sound chinook salmon was not available at the time the
21 DEIS was written. Table 3-2 summarizes Puget Sound chinook salmon escapement by population and
22 year, which includes the 2003 escapement information. Inclusion of the observed 2003 escapement
23 data would have changed the trends in two of the 22 populations in the Puget Sound chinook salmon
24 ESU for which data are available. Estimates of natural-origin escapement in 2003 are not yet available
25 for the Skykomish or Snoqualmie chinook salmon populations. Recent abundance trends for the Upper
26 Sauk spring and South Fork Stillaguamish populations would have changed from stable to decreasing
27 since March 1999 when the Puget Sound Chinook Evolutionary Significant Unit (ESU) was listed.
28 Abundance and exploitation rate data for 2003 is unavailable at this time to determine why 2003
29 escapements were lower in several areas than in recent years. It could be due to lower abundance than
30 in years previous or higher harvest in Canadian or southern U.S. fisheries than expected, or a
31 combination of several factors. The 2003 escapement information, however, would not have changed
32 the Environmental Consequences analysis in the DEIS, which was based on other data sources.

1 Table 3-2. Natural-origin or natural escapement for Puget Sound chinook salmon populations, 1990 to 2003.

Management Unit	Population	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Nooksack	Natural-Origin Spawner:	142	444	403	444	113	421	353	223	128	255	442	517	503	414
	North Fork Nooksack	6	87	345	285	26	175	210	121	39	91	159	250	221	210
	South Fork Nooksack	136	357	58	159	87	246	143	102	89	164	283	267	282	204
Skagit Summer/Fall	Natural Spawners:	16,792	5,824	7,348	5,801	5,549	6,877	10,613	4,872	14,609	4,924	16,930	13,793	19,591	9,489
	Upper Skagit River ¹	11,793	3,656	5,548	4,654	4,565	5,948	7,989	4,168	11,761	3,586	13,092	10,084	13,815	7,107
	Lower Sauk River ¹	1,294	658	469	205	100	263	1,103	295	460	295	576	1,103	910	1,493
	Lower Skagit River ¹	3,705	1,510	1,331	942	884	666	1,521	409	2,388	1,043	3,262	2,606	4,866	889
Skagit Spring	Natural Spawners:	1,511	1,346	986	783	470	855	1,051	1,041	1,086	471	906	1,856	1,065	786
	Upper Sauk River ¹	557	747	580	323	130	190	408	305	290	180	273	543	460	178
	Suiattle River ¹	685	464	201	292	167	440	435	428	473	208	360	688	265	353
	Upper Cascade River ¹	269	135	205	168	173	225	208	308	323	83	273	625	340	255
Stillaguamish	Natural-Origin Spawners:	701	1,279	716	725	743	654	935	839	863	767	1,127	936	1,090	
	N.F. Stillaguamish River	434	978	422	380	456	431	684	613	615	514	884	653	737	
	S.F. Stillaguamish River	267	301	294	345	287	223	251	226	248	253	243	283	353	
Snohomish	Natural-Origin Spawners:	3,662	2,447	2,242	3,190	2,039	1,252	2,379	3,517	2,919	2,430	2,900	5,869	4,544	
	Skykomish River	2,551	1,951	1,642	942	1,478	1,144	1,719	1,696	1,500	1,382	1,773	3,052	2,264	
	Snoqualmie River	1,111	496	600	2,248	561	108	660	1,821	1,419	1,048	1,127	2,817	2,280	
Lake Washington	Natural Spawners:	787	661	790	245	888	930	336	294	697	778	347	1,269	637	774
	Cedar River ^{1,2}	469	508	525	156	452	681	303	227	432	241	120	810	369	562
	Sammamish River ³	318	153	265	89	436	249	33	67	265	537	227	459	268	212
Green River	Natural Spawners:														
	Duamish-Green River	7,035	10,548	5,267	2,476	4,078	7,939	6,026	9,967	7,300 ⁶	9,100 ⁶	6,170	7,975	13,950	10,405

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Management Unit	Population	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
White River	Natural Spawners: White River	275	194	406	409	392	605	628	402	316	553	1,523	2,002	803	1,434
Puyallup	Natural Spawners: Puyallup River ⁴ S. Prairie Creek Index Area ⁴	3,515 -	1,702 -	3,034	1,999 -	1,328 798	2,344 1,408	2,111 1,268	1,110 667	1,711 1,028	1,988 1,430	1,193 695	1,915 1,154	1,590 840	1,173
Nisqually	Natural Spawners: Nisqually River	994	953	106	1,655	1,730	817	606	340	834	1,399	1,253	1,079	1,542	627
Skokomish	Natural Spawners: Skokomish River	642	1,719	825	960	657	1,398	995	452	1,177 ⁶	1,692 ⁶	926 ⁶	1,913 ⁶	1,479	1,125
Mid-Hood Canal	Natural Spawners Mid-Hood Canal Tributaries:	-	86	96	112	384	103	-	-	287	762	438	322	95	194
Dungeness	Natural Spawners: Dungeness River	310	163	158	43	65	163	183	50	110	75	218	453	633	640
Elwha	Natural Spawners: Elwha River ⁶	2,956	3,361	1,222	1,562	1,216	1,150	1,608	2,517	2,358	1,602	1,851	2,208	2,376	2,305
ESU Total		39,964	29,240	26,284	19,457	20,887	25,610	27,773	26,380	36,238	27,326	36,087	43,341	52,744	

¹ The majority are natural-origin spawner.

² The escapement estimates for the Cedar River are based on an expansion of a live count of fish. However, Cedar River redd counts suggests that this expansion of the live count may be a conservative estimate of the total escapement (P. Hage, Muckleshoot Tribe, e-mail to S. Bishop, NMFS, February 10, 2004).

³ Does not include escapement into the Upper Cottage Lake Creek, which has been surveyed since 1998. Surveys of the Upper Cottage Lake Creek have exceeded 100 fish (S. Foley, WDFW, pers. com., to K. Schultz, NMFS, February 19, 2004). Escapement counts also do not include spawners in Issaquah Creek, which are believed to be primarily Issaquah Hatchery returns (N. Sands, NMFS, e-mail to S. Bishop, NMFS, February 26, 2004). Therefore, escapement information presented is a conservative estimate of the total Sammamish River population's escapement.

⁴ The area surveyed for the South Prairie Creek index increased from 1.5 to 12.5 stream miles in 1994.

⁵ Escapement is considered in-river gross escapement plus hatchery voluntary escapement minus pre-spawning mortality.

SW-4

NMFS understands that this is a principle of the commentor's alternative; i.e., it is a key assumption of the commentor's alternative that if listed chinook needed to meet a valid spawning escapement objective are allowed to escape and spawn naturally, the net benefits derived from their progeny will, on average, be significantly greater than if the same fish had been immediately harvested. However, NMFS would need to be certain that this was a realistic assumption if the alternative was determined to be reasonable to analyze. The meaning of this comment is not clear as to whether the commentor is referring to economic, social, or biological benefits, and no information is provided to support the statement that the net benefits would be significantly better. NMFS also notes that the commentor does not propose that all listed chinook salmon below the spawning escapement objective be allowed to escape and spawn naturally (see comments SW-1B and SW-1E).

The goal of the Proposed Action is to exceed the upper threshold 80 percent of the time (more if productivity improves). Fisheries directed on naturally-produced chinook salmon are not expected to occur during implementation of the Proposed Action, because the abundance is not expected to be sufficient as defined under the terms of the Proposed Action except in a few areas expected to have large hatchery returns. The commentor has indicated he does not object to the harvest of hatchery-produced chinook salmon (see comments SW-1B, SW-9, SW-11). Therefore, the total benefits from the harvest of chinook occur primarily from the harvest of salmon species other than chinook salmon during which chinook are caught incidentally. In this context of benefits, it is not true to say that the future net benefits from not harvesting any component of the chinook return would be greater than the present benefits of harvest, because those present benefits are from the harvest of other species, not Chinook salmon. As shown by the evaluation of Alternatives 2 and 3 which use a fixed-escapement goal approach, these approaches would be expected to preclude most Puget Sound salmon fisheries given the range of abundances reasonably expected through 2009, providing very little net economic or social benefit from the additional escapement (see DEIS Subsection 4.6).

Under the biological interpretation of benefits, assuming a population is below the escapement associated with Maximum Sustained Yield (MSY)(the upper threshold referred in the comment), and that its spawner-recruit relationship is defined by a Beverton-Holt curve, then NMFS agrees that forgoing harvest now will allow the population to reach its upper threshold (as defined by MSY) in a shorter time period; however, it may not generate significantly greater benefits than would occur with some level of harvest. For this EIS, the only populations that were expected to achieve their viable escapement thresholds without fishing (Alternative 4), but not achieve their viable thresholds under the

Proposed Action were the Skokomish; the South Fork Stillaguamish and Upper Skagit summer run under the low abundance scenarios; and the Lower Sauk summer run under the high abundance scenarios (DEIS Table 4.3-5). Of these, the difference in expected Skokomish escapement between the Proposed Action and its viable threshold (1,250) was 11 to 39 spawning adults. The difference in expected South Fork Stillaguamish escapement between the Proposed Action and its viable threshold (300) was <1 to 7 spawning adults. The difference in expected Upper Skagit escapement between the Proposed Action and its viable threshold (7,454) was 700 to 1,100 spawning adults. The difference in expected Lower Sauk escapement between the Proposed Action and its viable threshold (681) was 61 to 93 spawning adults (DEIS Tables 4.3.7a through 4.3.10d). The South Fork Stillaguamish, Upper Skagit and Lower Sauk populations have associated NMFS-derived RERs that NMFS uses as harvest standards to evaluate the impact of proposed harvest actions on the Puget Sound Chinook ESU. One of the RER criteria is that escapement exceed the viable threshold at least 80 percent of the time at the end of 25 years. Both the South Fork Stillaguamish and the Upper Skagit summer run populations are anticipated to meet their RERs under all scenarios for both the Proposed Action and the no-fishing alternative. The same is true of the Lower Sauk population (except Scenario B, when abundance and northern fisheries are at high levels). The differences in escapement between the Proposed Action and the commentor's suggested Alternative 1A would be even less, or perhaps none, because the commentor also proposes some level of harvest below the upper escapement threshold to accommodate "valid incidental catch."

SW-5

Alternative 1A is not well-enough defined for NMFS to comment on its prospective performance relative to Alternative 1 (Proposed Action)(see responses to comments SW 1A-1H). However, by compiling statements scattered throughout Mr. Wright's comments, it appears that both Alternatives 1 and 1A have the same basic management strategy (i.e., incidental impacts only, unless the escapement level of the target run is projected to exceed an upper threshold), with the following differences:

- a) Alternative 1A has no ceiling on incidental catches; whereas, under Alternative 1, incidental catches cannot exceed a ceiling exploitation rate
- b) Alternative 1A variously defines "incidental" catch as that taken in only "valid" test, research, and ceremonial and subsistence fisheries; in fisheries targeting marked hatchery adults; or as the "surplus production from other salmonid resources."

Alternative 1 defines "incidental" as any fishery in which catches of harvestable fish predominate. Directed fisheries are those where encounters with listed chinook exceed encounters with unlisted chinook salmon. Directed fisheries, with the exception of fisheries for ceremonial and subsistence or research purposes, are not allowed under the Proposed Action

1 unless the number of spawners from listed Chinook salmon populations consistently exceeds the
2 Upper Management Threshold and exploitation rates are consistently less than the Rebuilding
3 Exploitation Rate (RER) ceilings (Section 5 of WDFW and PSIT 2004). In actual application,
4 almost all fisheries that have been conducted under Alternative 1-type management have been
5 composed overwhelmingly of harvestable fish, and might therefore also qualify as “incidental”
6 under Alternative 1A depending on which definition of valid incidental catch was used. So the
7 only practical difference between these definitions might be that Alternative 1A could potentially
8 allow fisheries in circumstances where Alternative 1 would not (e.g., chinook populations
9 without harvestable surplus make up more than 50% of the impacts).

10 c) Escapement objectives under Alternative 1A would apply only to management units; there would
11 be no escapement criteria applied to separate populations; and

12 d) Alternative 1A lacks Low Abundance Thresholds, which, under Alternative 1, are lower
13 escapement thresholds, applied to both management units and populations, below which the
14 exploitation rate ceilings in southern U.S. fisheries are further reduced.

15 e) Alternative 1 uses a mixture of escapement goal and exploitation rate management objectives.

16 Thus, it appears that the management strategies are similar, although Alternative 1A could be less
17 restrictive, and potentially allow more aggressive fishing, than under Alternative 1, depending on how
18 incidental catch levels were defined.

19 NMFS has preliminarily found that the implementation of fisheries under the Proposed Action, some of
20 which would result in some populations not achieving their Upper Management Threshold within the
21 duration of the Proposed Action (2005–2009), can be conducted without jeopardizing the Puget Sound
22 Chinook ESU. Furthermore, in some well-documented cases; e.g., Nooksack early and Stillaguamish
23 summer chinook salmon, further reduction in exploitation rate has resulted in no or very limited
24 increases in natural production because of limitations in the freshwater and marine environments.
25 Recovery of the ESU will require both increases in productivity as well as numbers of spawners.

26 **SW-6**

27 See responses to comments SW-4 and SW-30. In addition, the DEIS acknowledges that the Proposed
28 Action might reduce the probability of achieving the viable escapement threshold for some populations
29 in the Puget Sound Chinook ESU. However, while NMFS evaluates the effects of proposed harvest
30 actions on individual populations, it must make its determination on the risk to the ESU in total. This
31 determination accepts that not all populations in the Puget Sound Chinook ESU will share the same
32 level of risk. In selecting its Preferred Alternative, NMFS must give consideration to economic,
33 technical, and other factors, as well as environmental factors (CEQ Forty Most Asked Questions 4a).

1 NMFS accepts that the commentor does not agree with using the model results in reaching his
2 conclusions. However, NMFS must use the best available science in reaching its conclusion, and the
3 model results currently represent the best available science.

4 **SW-7**

5 NMFS acknowledges that the listing and recovery of species under the ESA imposes costs on taxpayers
6 and consumers. As described in an economic study of Snake River salmon recovery (Huppert and
7 Fluharty 1995), these costs include not only budgetary costs of the public agencies involved in recovery
8 efforts, but also the opportunities costs (i.e., value foregone) associated with restrictions on land use
9 activities such as mining, irrigated agriculture, and recreation and on other productive activities (e.g.,
10 hydropower generation).

11 As presented in the DEIS Fish section (Tables 4.3-7 through 4.3-10), implementing Alternative 1
12 (Proposed Action) could delay the recovery of some listed chinook salmon populations in Puget Sound
13 when compared with a no-harvest baseline. However, the effect that implementing Alternative 1 would
14 have on the recovery period affecting the de-listing of the Puget Sound Chinook ESU cannot be
15 determined with any reasonable degree of certainty. The harvest of Puget Sound chinook salmon is
16 only one of many factors that affect recovery, and the incremental effect of harvest cannot be
17 accurately isolated. Consequently, the extent to which the period of recovery is delayed cannot be
18 determined, nor can it be determined whether the delay in the recovery of several populations within
19 the multi-population Puget Sound Chinook ESU would affect the time in which the ESU would be de-
20 listed. NMFS has indicated that not all populations within the ESU would need to be at equally low risk
21 in order to determine that the ESU was sufficiently recovered to be de-listed, and that there are
22 probably multiple recovery scenarios.

23 To acknowledge that implementing Alternative 1 might extend the period of recovery for Puget Sound
24 chinook and potentially impose additional costs to taxpayers and consumers, the Environmental
25 Consequences section, *Economic Activity and Value* (Subsection 4.6) has been modified (see FEIS
26 Volume 2, Revised Draft EIS). NMFS considers this acknowledgement to be a conservative position.

27 **SW-8**

28 The best available information has been used to develop the escapement thresholds and account for
29 demographic and genetic concerns. For some populations, low abundance thresholds are equal to or
30 greater than the historic spawner numbers from which the population produced greater than one-return-
31 per-spawner. In that sense, the empirical evidence shows that the populations in question rebounded

1 from these levels. Derivation of the Low Abundance Thresholds in the Proposed Action is detailed in
2 Appendix A of the Proposed Action (produced in DEIS Appendix A). They are intended to define
3 escapement thresholds well above the point of population instability precisely because of the
4 uncertainties. Derivation of the critical and viable escapement thresholds used by NMFS in its
5 evaluation of the alternatives is described in DEIS Appendix C2.

6 The commentor's remarks argue for the minimum threshold to be determined on a population-by-
7 population basis, and considering the life history strategies and local conditions that would contribute
8 to depensation. NMFS agrees. Determination of the population size at which depensatory mortality
9 manifests is highly specific to each population and its habitat. NMFS also agrees that depensatory
10 effects can be manifested at population sizes larger than some of the critical escapement thresholds
11 used by NMFS (DEIS Subsection 4.3.1, *Threatened and Endangered Fish Species*). That is why NMFS
12 has used population-specific information on demographic and genetic effects where available, and
13 guidance from the scientific literature where it is unavailable, in deriving its critical thresholds. NMFS
14 has also incorporated error in its derivations to account for uncertainties in the data around these
15 effects. NMFS' critical escapement thresholds range from 200 to 1,650, and the viable escapement
16 thresholds from 300 to 7,454 reflecting the differences among Puget Sound chinook salmon
17 populations in size, habitat conditions and life history strategies. Re-examination of abundance
18 thresholds would occur through "adaptive management" under any of the alternatives.

19 Without intervention, populations may not be able to recover from very low abundances, or may lose
20 genetic integrity. The critical escapement threshold represents the point below which the possibility of
21 rebuilding declines significantly, and is therefore informative to managers in evaluating the status of
22 populations and the robustness of proposed management approaches (Feiberg 2004; McElhaney *et al.*
23 2000). Most of the low abundance thresholds in the Proposed Action are above the critical escapement
24 thresholds defined by NMFS in order to minimize the chance that escapements would approach critical
25 levels. The simulation models that NMFS uses to derive the RER standards used to evaluate of the
26 Proposed Action allow extinction to occur at very low abundance levels in order to simulate potential
27 real-world outcomes. The RER is the exploitation rate that is associated with a low probability of a
28 specific population falling below its critical escapement threshold ($\leq 5\%$) and a high probability (80%)
29 of exceeding its viable escapement threshold based on the model simulations. The RER is determined
30 by the most constraining of these two criteria, not solely on remaining above the critical escapement
31 threshold. In most cases, it is the probability of exceeding the viable escapement threshold that
32 determines the RER, not the critical escapement criterion. Escapement thresholds and the RERs would

1 be revised as additional information becomes available and provide a better view of how populations
2 actually respond at low abundances.

3 As explained in response to comment SW-5, directed fisheries, with the exception of fisheries for
4 ceremonial and subsistence or research purposes, are not allowed under the Proposed Action unless the
5 number of spawners from listed chinook salmon populations consistently exceeds the Upper
6 Management Threshold and exploitation rates are consistently less than the Rebuilding Exploitation
7 Rate (RER) ceilings (Section 5 of the Proposed Action found in DEIS Appendix A, and DEIS
8 Subsection 2.3.1).

9 Also see response to comment SW-4.

10 **SW-9**

11 It is true that three-year-old females are not a large part of the spawning population, but they do
12 contribute. Available information indicates that three-year-old spawners comprise, on average, a minor
13 proportion of Puget Sound natural-origin spawning populations in each year (8 to 20%) (PSTRT 2003a,
14 PSTRT 2003b; PSTRT 2003c; PSTRT 2003d; PSTRTe; PSTRT 2003f; PSTRT 2003g). However, the
15 proportion of three-year-old spawners can vary substantially from year to year, comprising up to 42
16 percent of the spawning population (PSTRT 2003e) in any year, depending on the survival of each of
17 the brood years contributing to that years' escapement. (Chinook salmon return to spawn at multiple
18 ages, so escapement in any year is usually comprised of 3, 4, and 5 year old spawners.) In 10 years of
19 broodstock collections in the Upper Skagit, during which 386 female spawners have been collected, 13
20 were age-three females (slightly more than 1 per year, or 3.4% of the total). The mean fecundity of
21 these females was 5,300 (range 2,700 to 7,400), and their length range was 64 centimeters to 85
22 centimeters, of which only two were less than 75 centimeters, and eight were in the 82 centimeter to 85
23 centimeter range. In five years of broodstock collections in the Lower Skagit, during which we've
24 collected 144 female spawners, 13 were age-three females (12 of these were collected in 2003), or 9
25 percent of the total. Their mean fecundity was 5,500 (range 3,300 to 7,100), and their mean length was
26 85 centimeters (range 80 centimeters to 105 centimeters) (personal communication with Bob Hayman,
27 Skagit Systems Cooperation, Salmon Recovery Planner, August 6, 2004). The fact that three-year-old
28 female spawners continue to consistently contribute to spawning populations, although in low
29 percentages, together with their substantial size and fecundity, suggests that they are an important
30 segment of diversity expressed by the species and at certain times, when environmental conditions
31 change suddenly, may be essential to maintaining the viability of the population.

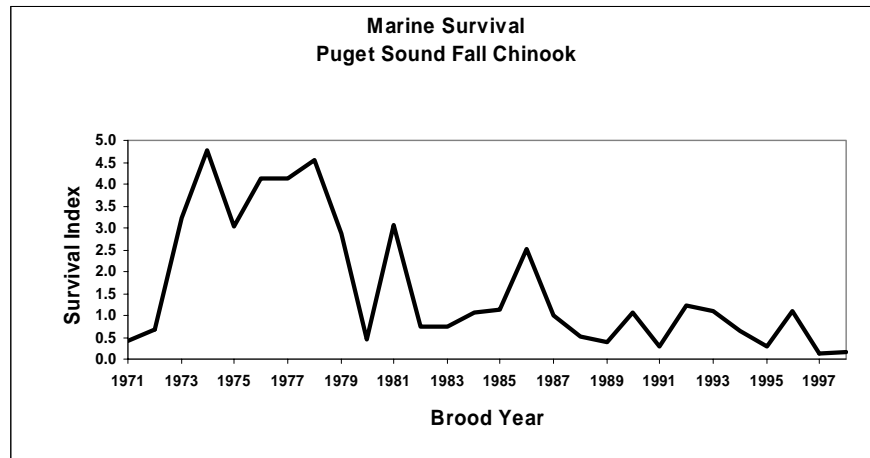
1 For these reasons, NMFS sees no reason to exclude three-year-old females from its development of
2 population harvest standards; evaluation of the performance of the alternatives in the DEIS, or
3 assessment of fishing regime performance in the future. As additional information becomes available
4 on age contribution, sex ratio and other biological characteristics, all the alternatives evaluated in the
5 DEIS would use this information to revise key parameters, assumptions, and harvest objectives through
6 the use of adaptive management.

7 Also see responses to comments SW-1A, SW-1F and SW-20.

8 **SW-10**

9 All alternatives in the DEIS were evaluated under the same conditions because each was evaluated
10 against the same assumptions of abundance and the same environmental variables that influenced that
11 abundance. Therefore, the results from the comparison of alternatives in the DEIS were the result of the
12 management approach represented by the alternative and not the environmental conditions. Trends in
13 escapement are the result of change in both environmental conditions and management. The DEIS
14 acknowledged that there is a possibility that abundances could change during implementation of the
15 Proposed Action from those observed in recent years due to changes in marine or freshwater
16 environmental conditions (see DEIS Subsection 4.2.3, *Scenarios for Alternatives*). In response, NMFS
17 evaluated a reduced abundance scenario based on observations of the period 1990 through 1999, for
18 which average, aggregate abundance of all Puget Sound chinook salmon stocks was approximately 30
19 percent lower than that of 2003 (DEIS Appendix C3). It should be noted that data on marine survival
20 for Puget Sound chinook populations indicate marine survival has not increased for these populations
21 as has been observed for some Columbia River chinook salmon populations (see Figure 3-1) (brood
22 year 1998 includes adult chinook returning through 2003) (personal communication with Dell
23 Simmons, NMFS, 2003). The evaluation also examined scenarios where Canadian fisheries were
24 managed near the limits of the current chinook annex of the Pacific Salmon Treaty (see DEIS
25 Subsection 4.2, *Basis for Comparison of Alternatives and Approach to Alternatives Analysis*).

1 Figure 3-1. Marine survival of Puget Sound fall chinook salmon: Brood Years 1971–98.



2

3 The modeling on which NMFS based its harvest standards (RERs) and many of the exploitation rate
4 objectives in Alternative 1 included times of both poor and good freshwater and marine survival. In
5 fact, the average marine survivals in the model simulations were equal to the average observed in a
6 recent period that had the lowest marine survivals in the database. Given that, escapements should be
7 even better if the average marine survival over the next 25 years reverts to the long-term average that
8 included times of better marine conditions (Figure 3-1).

9 The proposed resource management plan provided to NMFS by the co-managers indicates the harvest
10 management objectives in Alternative 1 (Proposed Action) were designed to maintain Puget Sound
11 chinook salmon populations so that they will be able to withstand the poor freshwater and marine
12 survival conditions that occur, and also be able to respond rapidly to improved conditions. For
13 example, the requirement of many of the RERs to meet or exceed the upper threshold means that, on
14 average, escapements will be above that threshold at the end of the rebuilding period. By allocating
15 more fish to escapement, as opposed to harvest, the stocks have a better chance to be as strong as
16 possible if the offspring of large escapements, like those seen in recent years for some populations, are
17 faced with poor freshwater and marine conditions. So returns in future times of poor marine survival
18 should be greater than they would have been if such an approach was not in place in times of good
19 marine survival.

20 See also responses to comments SW-1A (second paragraph regarding pre-season forecast ability to
21 detect strength of brood years), and SW-27.

SW-11

Seiler *et al.* (2002a and 2003a) have shown strong correlation between egg-to-smolt survival and flow. Major flood events provide the extremes, but it is not only the 100-year floods that depress survival. For example, the limiting effects of degraded or lost habitat on estuarine survival have been particularly well-documented in the Skagit (Beamer *et al.* 2003a and b). Until the causes for scouring flows in the Skagit can be identified and mitigated, each year has about an equal probability of suffering disastrous egg-to-migrant survival. Skagit flows during the last 8 years (1996–2004) have actually been average, when compared to flows since 1940. Marine survival rates may be less influential on overall survival in those instances, but depending on whether marine survival is lower or higher than average, can exacerbate or mitigate poor freshwater survival conditions in the number of subsequent adult spawners that return. This would not be accounted for by reliance on smolt trap data alone to predict survival. Both marine and freshwater survival are important to consider in forecasting abundance and in evaluating the robustness of Puget Sound chinook salmon populations to changes in their environment. The relative influence of the two varies among populations and over time. Both are explicitly considered in the derivation of the Skagit RERs (see DEIS Appendix C2, and Appendix A in the RMP). For example, the derivation of RERs for the Upper Sauk and Suiattle spring chinook salmon populations indicated that marine survival was not influential in the relationship between spawners and recruits for the Suiattle population, but did influence the relationship for the Upper Sauk population (Skagit RER Workgroup 2003).

Moreover, the objectives in Alternative 1 were not determined by assuming only recent-year environmental conditions as assumed by the commentor. To establish the Skagit objectives, flows back to 1972 were incorporated in the modeling (Skagit Management Unit Profile, in DEIS Appendix A) – this time period included flows with a 31-year recurrence interval (1975), two 16-year recurrence intervals (1979 and 1980), a 70-year recurrence interval (1990), and a 47-year recurrence interval (1995); i.e., a wide range of flow levels. Marine survival was modeled to vary cyclically, according to the variation observed across 13 brood years for summer/fall runs, and across 17 brood years for Skagit spring runs (personal communication with Bob Hayman, Skagit Systems Cooperative, Salmon Recovery Planner, August 6, 2004). Thus, the possibility that floods like those of 1990 and 1995 would occur occasionally (such as occurred in 2003), or that marine survival might decrease, was accounted for in the development of the objectives in the Proposed Action and in the choice of abundance scenarios against which to evaluate the alternatives in the DEIS.

Research (Mantua *et al.*1997) also supports the importance of marine survival effects on Pacific salmonids. Because of our inability to forecast marine survival and the large effect it may have, we have assumed low marine survival conditions in developing the RERs used by NMFS to evaluate the performance of the alternatives in the DEIS. In recognition of interannual variability in marine survival, NMFS incorporated error in these parameters into its derivation of RERs (NMFS 2000). Clearly, this is a conservative approach, providing additional escapement in good marine-survival years.

Also see responses to comments SW-8 and SW-27.

SW-12

The commentor stated that the RERs are “generally based on exploitation rates observed in the late 1990s.” That is only true for those populations where data were unavailable or inadequate to derive exploitation rate management objectives based on spawner-recruit relationships. Where data were adequate, RERs were derived from spawner-recruit relationships that used data on exploitation rates as far back as the early 1980s.

See also responses to comments SW-10, SW-11, and SW-23.

SW-13

A cornerstone of chinook and coho salmon management along the entire Pacific coast is the reliance of coded-wire-tagged (CWT) hatchery production to represent the behavior, migration, and vulnerability to harvest of associated wild salmon production. There are no on-going wild stock CWT programs on Puget Sound chinook. Initial efforts at tagging wild Puget Sound chinook stocks resulted in few recoveries and high tagging mortality rates, because wild chinook salmon juveniles emigrate at such a small size. Analysis of long-term exploitation and productivity trends must use existing CWT hatchery programs to represent the diversity of life histories of Puget Sound wild chinook. For the near term, CWT data from hatchery fish will have to suffice for much of the analysis and assessment of fishery impacts. For the long term, other stock identification methods may need to be developed to fill in data gaps and provide a better measure of wild stock impact assessment.

There is also some support for the use of hatchery surrogates to represent associated wild production and to represent unrelated populations. While Puget Sound summer and fall chinook salmon CWT hatchery stocks may have very different terminal harvest rates, and some differences in marine distribution, their total pre-terminal exploitation rates are very close to each other, and it is therefore believed that their mean is an acceptable approximation of the pre-terminal exploitation rate on other Puget Sound summer and fall chinook salmon populations that do not have associated CWT hatchery

1 production, including Skagit summer/fall runs (personal communication with Jim Scott, WDFW,
2 Senior Research Scientist, 2000). The spawner-recruit parameters generated from the CWT hatchery
3 stock data track very closely to those estimated independently from Skagit-specific habitat analyses
4 (personal communication with Bob Hayman, Skagit Systems Cooperative, Salmon Recovery Planner,
5 August 6 2004). This independent assessment provides support for the validity of these estimates.

6 In the development of some population-specific RERs, the co-managers (and NMFS) have used other
7 types of information to estimate fishery-related mortality on populations that do not have an associated
8 coded-wire-tagged hatchery indicator stock, if they judged that this information could better represent
9 the population of interest. For example, recognition of the differences in terminal fishery patterns
10 between chinook salmon returning to the Stillaguamish and Snohomish Rivers led the co-managers to
11 estimate exploitation rates for the Snohomish chinook population based on a terminal area run
12 reconstruction of catch and escapement of Snohomish chinook salmon rather than the Stillaguamish
13 chinook hatchery indicator stock (Snohomish RER Workgroup 2003). However, this method may not
14 be appropriate to other areas. Absent this type of information, the use of indicator stocks is the best
15 available information.

16 One correction needs to be made in the commentor's information. Skagit summer/fall chinook salmon
17 exploitation rates are not computed from Samish data; however, confusion is understandable. Skagit
18 summer/fall chinook salmon marine survival indices are computed from Samish chinook data.
19 However, the distribution data for Skagit summer/fall chinook salmon used for annual harvest planning
20 and post-fishing season review is derived from limited tagging of Skagit hatchery and wild stocks that
21 was done in the late 1970s.

22 **SW-14**

23 Enumeration of natural spawners can be improved in a few areas of Puget Sound, and the co-managers
24 are pursuing those improvements (see RMP Appendix E in DEIS Appendix A). These enumeration
25 problems have been consistent through time. Spawning escapement estimates upon which current
26 impacts assessments rely have not improved enough in the past 15 years such that calculated
27 exploitation rates would be biased. Some work has been done to verify assumptions in current methods,
28 but alternative methods, which in some cases have produced higher estimates of escapement, are not
29 yet accepted for management use.

30 Historical fisheries exploitation rate histories are calculated from CWT data from "indicator stocks"
31 (indicate the distribution, status and mortality of associated wild stocks) that are selected for accuracy

standards, including the ability to completely account for escapement of tagged fish and all fishery impacts. The PSC Chinook Technical Committee examines these data carefully for sampling errors, and if flaws are identified for these indicator CWT groups, then the time series is reduced to ensure comparability of the data. If CWT data are found to be biased, those indicator CWT groups are not used to estimate exploitation rates. See the Pacific Salmon Commission's Chinook Technical Committee report TCChinook 93-2 for a description of methods used in calculating and comparing exploitation rates.

SW-15

The commentor's description of management for the Nisqually and Skokomish Chinook salmon populations is incorrect. For the Skokomish River population, the 3,650 and the 10,529 figures include combined river and hatchery escapement. The Nisqually and Skokomish populations have been managed to achieve natural escapement as a primary management objective only since 2000. The DEIS acknowledges the possibility of escapements exceeding (or falling below) the escapement goal in some years due to management imprecision, although this is not the intent of a fixed-goal harvest management approach (DEIS Subsection 2.3.2, *Alternative 2 – Escapement Goal Management*). However, the degree to which escapement deviates from the threshold varies from year to year depending on the management decisions and error in forecasted abundance. Therefore, for the purposes of the DEIS analyses, populations that were managed for escapement thresholds were treated the same across alternatives with fisheries modeled to harvest all chinook salmon in excess of the escapement goals (DEIS Subsection 2.3.1-3, *Alternative 1 – Proposed Action/Status Quo*).

The co-managers have not implemented an exploitation rate approach to management under the Proposed Action for the purpose implied by the author. A major objective of the Puget Sound Resource Management Plan is to pass "additional" spawners to the spawning grounds in high-abundance years – something that would not occur under fixed-escapement goal management (personal communication with Teresa Scott, WDFW, Natural Resource Policy Analyst, and Will Beattie, NWIFC, Conservation Planning Coordinator, July 30, 2004). These additional spawners can take advantage of newly-restored and expanded habitat provided through recovery actions in the other "H" sectors and favorable environmental conditions. Because the Proposed Action provides for additional spawners, over the long term, the managers' Rebuilding Exploitation Rate ceilings provide a natural rebuilding potential as

1 habitat conditions and capacity improve (see responses to comments SW-10 and EPA-8)².
2 Additionally, exploitation rates are advantageous for management applications where forecast
3 abundance has a high degree of uncertainty (Feiberg 2004, and FEIS Volume 2, Subsection 4.3.8.1,
4 *Indirect Effects*).

5 Exploitation rates used in managing Puget Sound fisheries have another important advantage over the
6 alternative fixed-escapement goal approach. Exploitation rates are used to define fishing limits and
7 management goals in northern fisheries managed under the Pacific Salmon Treaty (PST), therefore
8 providing needed compatibility among the coastwide management jurisdiction.

9 **SW-16**

10 NMFS' RERs are designed to achieve a high probability of exceeding an upper escapement threshold
11 and a low probability of declining below the critical escapement threshold within a specified time
12 period; i.e., the resultant numbers of fish referred to by the commentor. The derivation of RERs
13 incorporates many conservative assumptions (lower than current marine survival, robust to
14 management error, no consideration of the conservative effect of the response to critical status) to
15 achieve precision in both the RER and the desired achievement of the escapement thresholds (DEIS
16 Appendix C2; NMFS 2000; Nooksack RER Workgroup 2003; Skagit RER Workgroup 2003). FEIS
17 Volume 2, Subsection 4.3.8 (*Indirect and Cumulative Effects*) compares in more detail exploitation rate
18 and escapement goal approaches.

19 **SW-17**

20 There is uncertainty about MSY escapement levels for Puget Sound chinook salmon, as for many other
21 fish species. Indeed, these levels change with conditions of marine survival, and habitat and population
22 productivity. For management units that are managed for RERs under the Proposed Action, spawner-
23 recruit functions have been estimated as accurately and conservatively as possible given the best
24 available information. No one method, neither adult spawner-to-migrant nor adult spawner-to-adult
25 spawner relationships, can be relied upon solely to define population performance (productivity), or to
26 precisely define management objectives. It is not clear what the advantage of Alternative 1A over
27 Alternative 1 would be, given that, according to the commentor, they appear to share the same key
28 uncertainty (spawner escapement goal under Alternative 1A, upper abundance threshold under

² Given the short duration of the Proposed Action (2005–2009), favorable freshwater and marine environmental conditions will be more influential in increasing subsequent production from higher escapements than habitat improvements from implementation of the Proposed Action. The effects of habitat restoration are expected to be realized over a period of decades.

1 Alternative 1). Either method would “quickly improve as information becomes available.” The contrast
2 with management of sockeye and chum is inappropriate because both species are harvested both in pre-
3 terminal and terminal fisheries – the accuracy of catch statistics is the same regardless of species.

4 Evaluation of management imprecision among the different alternatives is only one of the biological
5 factors on which NMFS relied in choosing its Preferred Alternatives. All alternatives were also
6 evaluated in terms of the resulting exploitation rates, escapements and achievement of population
7 harvest standards. Management error is not incorporated in modeling any of the alternatives, including
8 the Proposed Action. In this way, the alternatives are treated exactly the same in the DEIS analyses.
9 Also see response to comment WT-33.

10 **SW-18**

11 The commentor reported that juvenile research on the Skagit indicates that the current chinook salmon
12 smolt capacity of the Skagit River appears to be five to six million freshwater smolts, which have been
13 produced by adult escapements ranging from 15,600 to 20,700, while lower escapements (5,400 to
14 11,700) have produced fewer smolts (1.5 to 4 million). Indeed, the Skagit summer/fall viable
15 escapement thresholds proposed in Alternative 1 are consistent with these capacity numbers (VET =
16 14,500 for summer/falls, and VET = 2,000 for springs; total is 16,500, which is within the range
17 between 15,600 to 20,700). However, these threshold numbers are buffered for management error, and
18 are actually significantly greater than the levels that would maximize harvestable surplus if
19 management precision was perfect. The commentor may be unaware that, while the Skagit River has
20 been able to produce up to six million total fingerling chinook smolts, it has only been able to produce
21 about 2 to 2.5 million parr migrant chinook smolts, and this parr migrant capacity has been achieved
22 with lower escapements, in the 8,000 to 12,000 range. Because parr migrants are the only chinook
23 salmon life history type that has thus far been documented in the adult returns, it might be concluded
24 that, under current conditions and perfect management precision, the adult chinook salmon capacity of
25 the Skagit River can be achieved with spawning escapements in the 8,000 to 12,000 range. Moreover,
26 juvenile chinook salmon rearing capacity in the tidal delta habitat (further downstream from where the
27 freshwater smolts are estimated) appears to approach capacity at a density of about 12,000
28 smolts/hectare blind channel, which has also been achieved with escapements in the 8,000 to 12,000
29 range (personal communication with Bob Hayman, Skagit Systems Cooperative, Salmon Recovery
30 Planner, August 6, 2004). Research is continuing, particularly in pocket estuary habitat (which may
31 have potential for fry migrants), but the results to-date indicate that the viable escapement thresholds

1 proposed for Skagit River management units in Alternative 1 are indeed conservative, precautionary,
2 standards.

3 **SW-19**

4 The commentor is correct that the DEIS treats Canadian interceptions as though they are a “given” that
5 must be accounted for in the U.S. domestic fisheries management planning process. That is a necessary
6 assumption until a different arrangement is negotiated with Canada. However, the commentor
7 oversimplifies the relationship of the two countries’ interceptions and as to how the balance is arrived,
8 by essentially implying that the number and species of each party’s interceptions are merely currency
9 that can be readily exchanged between the two countries by decision of their respective federal
10 governments, and that the “exchange” begins with neither party intercepting fish originating in the
11 other country. The realities are different. Both countries have depressed stocks of concern, and it is a
12 given that each would prefer that the other country intercept fewer of them. However, both countries
13 also have long-established fisheries that involve interceptions. A party’s desire to reduce the other
14 country’s interceptions does not in itself lead to a mandate by either of the parties’ federal governments
15 to “trade away” fish that are intercepted in that country’s other domestic fisheries. In fact, the ability of
16 both countries to effectuate such trade-offs is constrained by the terms of the Pacific Salmon Treaty,
17 their respective internal decision making processes (e.g., on the U.S. side, by the Pacific Salmon Treaty
18 Act), and by their respective interests in protecting their own existing fisheries. Nonetheless, it is quite
19 possible that, when the terms of the existing fishing arrangements under the Pacific Salmon Treaty
20 expire after 2008 and 2010, the parties’ priorities will have changed. Their respective resource needs
21 and other priorities may change relative to those that existed in 1999, which are reflected in the current
22 arrangements, thus leading them to develop different provisions that, in turn, will have to be reflected
23 in their respective domestic management processes. That is why the duration of the Proposed Action in
24 the DEIS coincides with the negotiation of a new Pacific Salmon Treaty agreement in 2009. Until then,
25 the DEIS must take into account the terms of the existing Pacific Salmon Treaty Agreement when
26 evaluating alternatives within the scope of the Proposed Action; i.e., steelhead net and salmon fisheries
27 within Puget Sound.

28 In the final statement in this comment, the commentor suggests that Alternative 1 is concerned only
29 with preservation of the ESU. The Puget Sound Chinook ESU, not the component, individual
30 populations, is the primary focus of NMFS’ evaluation of the impacts of the Proposed Action and its
31 alternatives under the ESA. The determination that NMFS must make under Limit 6 of the ESA 4(d)
32 Rule is that the proposed action will not “...appreciably reduce the survival or recovery of the affected

1 threatened ESUs....” (65 FR 42422). However, in doing so, NMFS considers the status and distribution
2 of the populations within the ESU. In conducting this evaluation, NMFS takes into account the
3 recommendations of the Puget Sound TRT, which is charged with identifying the biological
4 characteristics of a recovered ESU as part of developing delisting and recovery criteria. The TRT’s
5 preliminary recommendation is that any ESU-wide recovery scenario should include at least two to
6 four viable chinook salmon populations in each of five geographic regions within Puget Sound,
7 depending on the historical life history and biological characteristics of populations in each region.
8 NMFS has evaluated the co-managers plan using the best available information regarding the
9 expectation of conditions over the proposed duration of the plan (2005–2009), and evaluated the
10 outcome against NMFS’ standards for listed Puget Sound chinook salmon and the TRT’s. NMFS’ has
11 concluded in its 4(d) evaluation and in a biological opinion under section 7 of the ESA that the 2005–
12 2009 co-managers’ Puget Sound Chinook Harvest Resource Management Plan would not pose
13 jeopardy to the Puget Sound Chinook ESU guidance (NMFS 2004a; NMFS 2004b).

14 **SW-20**

15 See response to comments SW-1A, SW-1F and SW-9.

16 **SW-21**

17 The Puget Sound Technical Recovery Team has preliminarily delineated 22 chinook salmon
18 populations that are currently extant within Puget Sound (PSTRT 2004). It is expected that as an
19 outcome of the recovery planning process, a subset of the 22 extant populations will be managed for
20 recovery to viable, self-sustaining levels. Included among the 22 delineated populations are the two
21 chinook salmon populations originating from the Cedar River and from the North Lake Washington
22 tributaries. Both of the populations identified in the Lake Washington watershed are fall-run fish that
23 are similar in genetic characteristics (Marshall *et al.* 1995), adult return and spawn timing (SaSI 2003),
24 and juvenile out-migrant size and timing (Seiler *et al.* 2003b) to other fall chinook salmon populations
25 within the mid- and south Puget Sound sub-regions, including the Green River. Like other fall-run
26 chinook salmon populations in the region, the two Lake Washington watershed chinook populations
27 have an ocean-rearing life history strategy, emigrating seaward as 0+ age fish. Similar to fall-run
28 populations in the Skagit, Duwamish-Green, and Deschutes Rivers (Seiler *et al.* 2001; Seiler *et al.*
29 2002a; Seiler *et al.* 2002b; Fuss 2003), the annual emigration timing for the Lake Washington
30 populations is bimodal, with an early peak for fry emigrants and a later peak for smolt emigrants (Seiler
31 *et al.* 2003). Fry emigrants leaving the rivers and streams January through March rear in Lake
32 Washington and Lake Sammamish to a size where survival in seawater is possible. They then emigrate

1 seaward as smolts in May through July, similar in emigration timing to other fall-run chinook smolt
2 populations in Puget Sound. The extent of use of the lakes for rearing by the emigrating smolt
3 component from the Cedar River and North Lake Washington tributaries is unknown, but June-July
4 chinook smolt emigration peak at the Ballard Locks suggests that rearing is not prolonged. The
5 proportions of fry and smolts in the total migration into the lake varies between years and streams as a
6 function of several variables, including flow and stream gradient. In the higher-gradient Cedar River,
7 most juvenile chinook emigrate as fry, with flow at the time of emergence having a strong positive
8 effect on the fry emigration. WDFW biologists studying chinook juvenile emigration behavior in the
9 Cedar River believe that fry collected in downstream migrant traps are not really migrating, but are
10 being flushed downstream in years when flows are spiking during fry emergence. There is a therefore
11 the potential that, rather than reflecting a genetic predisposition and a unique population trait, lake
12 rearing may be a happenstance response to adverse environmental conditions in the Cedar River. It is
13 highly likely that emerging fry are being involuntarily flushed out of the Cedar River, arriving in Lake
14 Washington where they may rear to smolt size prior to emigrating seaward, like other fall-run chinook
15 salmon sub-yearling populations in the early summer.

16 An additional consideration is that data collected in 2003 show that a substantial proportion of the total
17 adult chinook escapements into Lake Washington tributaries, including the Cedar River and North
18 Lake Washington tributaries, were stray Green River lineage hatchery fish (Burton *et al.*, 2004). This
19 last year was the first in which most four-year-old hatchery-origin fall chinook adults returning to
20 spawn in the area were mass-marked with an adipose fin clip, allowing for determinations of the
21 natural population abundance “masking” effect attendant with hatchery fish straying. Given long-
22 standing hatchery fall chinook production in the watershed (Issaquah Hatchery has operated since
23 1937), non-native hatchery fall chinook straying within the watershed has likely occurred for decades.

24 The Puget Sound TRT has provided initial guidelines for recovery for the number and distribution of
25 populations within the listed Puget Sound Chinook ESU (PSTRT 2002a). NMFS has used that
26 guidance in its assessment of the effects of the Proposed Action on the recovery of the ESU as the best
27 available information on this subject. That guidance includes the Cedar River and Lake Washington
28 populations in a group of five late-type populations in the South Puget Sound region of the Puget
29 Sound ESU, and suggests that two to four viable populations within each region representing the range
30 of life-history types is necessary for a recovered ESU. While NMFS evaluates the effects of proposed
31 harvest actions on individual populations, it must make its determination on the risk to the ESU in total.
32 The DEIS recognizes the documented and likely similarities between the Cedar River and North Lake

1 Washington, and other mid- and south Sound region fall-run chinook salmon populations when
2 considering ESU-wide ramifications of the proposed harvest management framework. However, it was
3 not an intention to subordinate preservation and recovery needs for the individual Lake Washington
4 watershed chinook salmon populations through the evaluation. Instead, the intent was to factor risks to
5 the ESU if abundances of those populations were adversely affected by the proposed harvest actions.
6 The DEIS concludes that the risk of extinction to the Puget Sound Chinook ESU is not increased by the
7 potential for harvest impacts to the Lake Washington watershed chinook salmon populations over the
8 plan's five-year duration when those populations are near their critical thresholds. NMFS believes that
9 implementation of the Resource Management Plan will not preclude management options for recovery
10 of the Lake Washington chinook salmon populations that could be adopted as an outcome of the
11 recovery planning process.

12 **SW-22**

13 Comment noted; however, no analysis or data is provided to support this conclusion.

14 **SW-23**

15 The commentor states that "Skagit River chinook enjoyed a very fortunate string of seven consecutive
16 brood years (1996-2002) in which incubating eggs were not seriously impacted by high flood flows."
17 In actuality, flows in the Skagit River since 1996 have not been unusual or particularly "fortuitous."
18 Since 1940, the median peak daily flow at Mount Vernon during chinook incubation has been 61,000
19 cubic feet per second. In the 8 years since 1996, four years have had lower peak flows, and four years
20 have had higher peak flows. In other words, flows have been average; thus, the success the commentor
21 noted for Alternative 1 (SW-10) during recent years occurred under average flow conditions.

22 Of an estimated 45.3 million eggs deposited in 1990, only about 500,000 smolts survived to migrate
23 from the Skagit River, a survival rate of about 1.2 percent. Ironically, the 1990 brood resulted from a
24 recent record chinook spawning escapement of more than 18,000. The 1995 brood egg deposition was
25 estimated at 19.6 million, yet only 3.8 percent, or 700,000, survived to migrate. These survivals
26 contrast with an average (non-flood-year) egg-to-migrant survival of about 13 percent. The fact that we
27 have smolt estimates for the Skagit River that reflect disastrous freshwater survival is clear evidence
28 that we have the capability to predict low abundance in advance of significant fishing mortality. The 30
29 percent reduction in abundance scenarios are based on years that include the significant flood events of
30 1990 and 1995, specifically in recognition that abundance might differ from that seen in recent years. A
31 preliminary analysis of the projected abundance from the 2003 brood year indicates it should be within
32 the 30 percent reduction scenario analyzed in the DEIS (see response to comment SW-27). NMFS

1 recognized that in this modeling, exercise conservative assumptions were made and there was always
2 the possibility that in any individual year the results could be different than the range of possibilities
3 considered. If impacts under the implementation of the Proposed Action are greater than expected,
4 NMFS can withdraw the ESA 4(d) Rule determination or ask the co-managers to adjust fisheries to
5 reduce impacts.

6 It is incorrect to say that immature fish would not be “managed” under the Proposed Action, since
7 management under the Proposed Action does consider the age of fish harvested in each fishery. Indeed,
8 fishing periods for fisheries targeting sub-adult chinook salmon have varied each year since 2001,
9 showing that managers are consciously examining the sub-adult impacts during that period. It is true to
10 say that mature fish from the 2003 brood will be managed in 2007; it is not valid to assume that
11 management in 2005 and 2006 will not be responsive to the 2003 brood. The complexity of
12 implementing brood management, even if the required data and models were available, makes it
13 impractical in the context of annual fishery season setting. A comparison of exploitation rates on
14 brood-year and calendar bases indicate that there is not an appreciable difference in management
15 outcome over the long term. Also see responses to comments SW-1A and SW-1F.

16 Regarding the statement requesting that surplus production for harvest be shown to exist before
17 directed, non-selective fisheries are allowed – directed fisheries are not anticipated through the duration
18 of the Proposed Action except for a few populations where large returns of hatchery adults are
19 expected. Also see response to comment SW-8 and SW-30.

20 Finally, many of the commentor’s points provide evidence that habitat condition, not spawner
21 abundance, is the primary limiting factor in the Skagit River. It is also possible that “weak brood”
22 management, as suggested by the comment, would likely result in consistent overescapement and
23 increased compensatory mortality, particularly in systems that are clearly shown to be habitat-limited.

SW-24

25 When the Puget Sound Chinook ESU was listed as threatened in 1999, habitat loss, degradation, and
26 blockage, and past over-exploitation in fisheries were identified as the primary factors for decline of
27 regional populations (64 FR 14308, March 24, 1999). The concerns identified in association with
28 hatchery effects in the NMFS final listing determination document for the ESU were widespread
29 production of hatchery chinook salmon and the inability to differentiate hatchery and natural-origin
30 chinook salmon in natural spawning areas. The abundance of unmarked hatchery fish masked the status
31 of natural populations, complicating assessment of natural population abundance, survival and

1 productivity. It is correct that five hatchery populations were determined to be essential for recovery of
2 the ESU and protected under ESA provisions with natural-origin populations. It is incorrect that all
3 hatchery populations, listed and unlisted, are now uniformly considered to have significant beneficial
4 effects on ESU recovery. NMFS has proposed in its updated status review for the ESU that hatchery
5 chinook populations located in chinook salmon watersheds that are no more than moderately divergent
6 from natural chinook populations within the ESU also be ESA-listed and protected (69 FR 33102, June
7 14, 2004). These additional hatchery populations were considered in the updated status review for their
8 contribution to the conservation of the ESU in extinction risk assessments. These hatchery populations,
9 and other hatchery stocks not proposed for ESA listing, were also evaluated for potential risks to the
10 viability of natural chinook salmon populations. Listed and non-listed hatchery chinook salmon
11 straying into other watersheds is not considered a beneficial effect by NMFS, and hatchery operational
12 measures are being implemented by the co-managers to lessen straying levels (WDFW and PSTT
13 2004). These and other adjustments in hatchery practices within the ESU will be evaluated in other, on-
14 going ESA and NEPA review processes administered by NMFS. Included in these evaluations will be
15 effects of hatchery programs on recovery of the listed chinook salmon ESU. Explanations regarding the
16 scientific rationale for NMFS' proposed Hatchery Listing Policy and the updated salmon population
17 status review findings based on application of the Policy are outside the scope of the DEIS. Information
18 regarding the scientific basis for these documents may be found through the NMFS Northwest region
19 web-site at <http://www.nwr.noaa.gov/AlseaResponse/20040528/index.html>.

20 The potential beneficial and adverse effects of artificial programs are described in DEIS Subsection
21 3.3.8.1, *Hatchery-Related Fishery Effects on Salmon: Straying and Overfishing*. The fishery-related
22 effects are evaluated in Subsection 4.3.7, *Effects of Hatchery-Origin Chinook on Natural-Spawning*
23 *Chinook Salmon*. Specifically, the DEIS states on page 4-90, "...to the extent that increases in the
24 contribution of hatchery-origin adults on the natural spawning grounds increase risks such as predation
25 on naturally-produced salmon, or competition with naturally-produced salmon for food, and rearing
26 and spawning areas, a reduction in the contribution of hatchery-origin adults on the natural spawning
27 grounds would be considered a beneficial effect. Information is not currently available to determine
28 with certainty what levels of hatchery contribution to naturally-spawning Chinook salmon populations
29 in Puget Sound result in what levels of risk or benefit....for the purpose of this analysis, a reduction in
30 hatchery contribution will be considered a benefit..."

SW-25

NMFS declines to include the reference offered in this comment in its evaluation. The findings are probably not applicable to nearly all hatchery chinook populations in Puget Sound (Dungeness was the lone captive brood program). Reduced adult size, egg size and spawning fitness have been indicated in other studies for captive brood fish (usually farmed salmon) (personal communication with Tim Tynan, NMFS, Fisheries Biologist, July 26, 2004). Captive brood fish have the highest level of intervention of any “hatchery” produced fish (since they are held in captivity for their entire lives). They would, therefore, be expected to exhibit the highest domestication effects. About 95 percent of chinook salmon reared in Puget Sound hatcheries are released as sub-yearlings. Captivity in the hatchery environment for these fish amounts to about 5 percent of their life cycle, assuming adults return primarily as four year olds.

The patterns in the study are primarily driven by some years in the early 1990s, where egg size and fecundity decreased. These were years when ocean productivity conditions were very low, and affected coho and chinook salmon size and survival. The patterns of decreased egg size may in fact be real, but it is not clear that hatchery practices are the cause or that it would be applicable to Puget Sound chinook salmon populations. The potential effects of hatchery practices on the fecundity, egg size, and reproductive fitness are outside the scope of this Proposed Action, but will be examined in an EIS that NMFS is conducting on the effects of proposed Puget Sound hatchery programs on listed Puget Sound chinook salmon.

SW-26

The Puget Sound TRT has provided initial guidelines for recovery for the number and distribution of populations within the Puget Sound Chinook ESU (PSTRT 2002a). NMFS has used that guidance in its assessment of the effects of the Proposed Action on the recovery of the ESU as the best available information on this subject. The guidance recognizes the diversity of the chinook salmon populations in the Puget Sound Chinook ESU. The guidance defines five geographical regions within the ESU and the need to protect two to four populations within each region, representing the range of life history types in each region. Application of the TRT guidance would not result in protection of only a single chinook salmon population within the Puget Sound Chinook ESU.

SW-27

The commentor states that the 2003 flood event, which likely had impacts comparable to those of the 1990 flood event, could cause a 14-fold reduction in smolt abundance in a particular year, and that, because the DEIS only analyzed a 30 percent reduction in abundance from 2003 levels, “the entire

1 analysis in the DEIS has already become obsolete for the 6-year period in question.” The source of the
2 30 percent reduction is the calculation that overall average abundance in the early-to-mid-1990s, during
3 which Puget Sound chinook experienced both low marine survival and two major flood events, was
4 approximately 30 percent less than the average forecasted abundance during 2001–2003 (DEIS
5 Subsection 4.2.3.1, *Abundance*). The 30 percent reduction is therefore applicable to the average adult
6 abundance over a 5-year period, not to the reduction in abundance possible for smolts in one single
7 year. In terms of the effect that the 2003 flood might have on average adult abundance over the five-
8 year period of the plan, if it is assumed that the 2003 brood year has the same survival rate as the 1990
9 brood year, and that all other brood survival rates vary randomly according to those observed from
10 1987–2001, the median expected spawning escapement of Skagit summer/fall chinook salmon over the
11 5-year time period would be 16,000 adults, and the median terminal run size would be 17,200 adults
12 (personal communication with Bob Hayman, Skagit Systems Cooperative, May 10, 2004). In contrast,
13 if it is assumed that the brood year 2003 return rate also varies randomly (i.e., ignore the flood), the
14 median escapement would be 17,000 adults, and the median terminal run size would be 18,400 adults.
15 Thus, the expected affect of the 2003 flood would be a reduction in average abundance of only 6.5
16 percent (personal communication with Bob Hayman, Skagit Systems Cooperative, Salmon Recovery
17 Planner, August 6, 2004). This is well within the 30 percent reduction in average abundance analyzed
18 in the DEIS.

19 Moreover, if return rates are not varied, and it is assumed that mean return rates apply for every brood
20 except that of 2003 (for which the 1990 rates would apply), the calculated mean escapement, 21,284, is
21 only an 8 percent reduction from the mean escapement that would be projected if mean return rates
22 were used for every year (personal communication with Bob Hayman, Skagit Systems Cooperative,
23 May 10, 2004), which is also well within the 30 percent reduction analyzed in the DEIS.

24 This is not to belittle the effects of the 2003 flood on individual years; however, it also should not be
25 forgotten that chinook salmon mature at multiple ages, and that strong returns from adjacent broods can
26 mitigate to some extent the impact on a single brood. If we assume 1990 return rates for brood year
27 2003, and mean return rates for all other broods, and that 2003 FRAM exploitation rates apply in odd
28 years and 2004 rates apply in even years, then the expected Skagit summer/fall chinook salmon
29 escapement in fishing year 2007 would be about 12,000 adults (personal communication with Bob
30 Hayman, Skagit Systems Cooperative, May 10, 2004). This is considerably lower than the numbers
31 projected for the other years, but is considerably higher than a 14-fold decrease.

Research supports the importance of cycles of marine survival on Pacific salmonids (Mantua *et al.* 1997). Because of our inability to forecast marine survival and the large effect it may have, low marine survival conditions have been assumed in developing the RERs used by NMFS to evaluate the performance of the alternatives in the DEIS. In recognition of interannual variability in marine survival, NMFS incorporated error in these parameters into its derivation of RERs (NMFS 2000). This is a conservative approach, providing additional escapement in good marine-survival years.

SW-28

NMFS, in cooperation with the co-managers, has modeled the anticipated impacts of implementation of the Proposed Action and its alternatives. The 2003 forecasted abundance and a 30 percent reduction from that level for all populations were modeled as the range of Puget Sound chinook salmon abundance likely to occur over the duration of the Proposed Action (2005–2009). The reduced abundance condition was based on observations of the period 1990 through 1999 (DEIS Appendix C3) that included years with significant flood events; e.g., 1990, 1995, similar to that of 2003 (Seiler *et al.* 2000). This range of modeled abundance is considered conservative. Given the general trend of stable to increasing abundance, it is likely that if the actual abundance in the next five years falls outside this range, the actual abundance would most likely be greater.

NMFS recognized that in this modeling exercise, conservative assumptions were made, and that there was always the possibility that in any individual year the results could be different than the range of possibilities considered. If impacts under implementation of the Proposed Action are greater than expected, NMFS can withdraw the ESA 4(d) Rule determination or ask the co-managers to adjust fisheries to reduce impacts.

See responses to comments SW-23 and SW-27.

SW-29

The commentor is correct that 1997 incidental chinook catch in the Marine Catch Area 7/7A sockeye fishery was anomalous, but incorrect in assuming it was intentional or “directed.” Table 1.6-1 also indicates that there were more than 3 million sockeye and pink salmon caught in 1997 along with the 29,592 chinook salmon. In other words, the catch of all salmon species was greater in 1997 with chinook comprising less than 1 percent of the catch. Over 70 percent of the coded-wire tags recovered from chinook salmon caught in Areas 7 and 7A during the pink and sockeye fisheries were of Canadian origin, and the year class of three-year-old Fraser River chinook was stronger than average. Despite the larger than usual incidental catch of chinook salmon in the sockeye and pink fisheries, the exploitation

1 rates in pre-terminal fisheries were generally lower for Puget Sound chinook stocks than in previous
2 years. There may have been unusually high local abundance or availability; i.e., more abundance of
3 Canadian stocks, in areas where U.S. commercial pink and sockeye fisheries occurred in 1997, or just a
4 greater overall abundance of salmon, but there were no commercial fisheries in these areas
5 intentionally targeting chinook salmon. It is not clear what ‘analysis’ is referred to by the commentor,
6 but the Environmental Consequences analysis (DEIS Section 4) compared alternatives to the 2003 pre-
7 season ‘baseline,’ not historical average catch, so the 1997 anomaly does not pose any analytical risk.

8 The commentor has pointed out a typographic error on page 1-23 in the DEIS – the figure “50,000”
9 was intended. Marine sport catch ranged from 26,000 to 41,000 in 1998-2002 with an average of about
10 31,000. This correction has been made in FEIS Volume 2 (also on page 1-23).

11 The citation of Bigler *et al.* was used as general reference to illustrate that there are a variety of cause
12 and effect relationships that might result in the same pattern of trends in size; i.e., competition for food
13 or fishery selection. This can be true regardless of salmon species. It was not intended to be specific to
14 Puget Sound chinook salmon. In pointing out the difficulties inherent in the use of some of the fisheries
15 by Bigler *et al.*, the commentor underscores a primary point of DEIS Subsection 3.3.7, *Selectivity on*
16 *Biological Characteristics of Salmon*, which is the difficulty in establishing a clear causal link between
17 changes in size and/or age in chinook salmon populations and the fisheries that intercept them. The
18 commentor is referred to the revision to Subsection 3.3.7 in FEIS Volume 2 that includes additional
19 language on size-at-age analyses specific to Puget Sound chinook salmon populations described in the
20 DEIS but completed subsequent to its publication.

21 Finally, NMFS recognizes the limitations to the estimates of early twentieth century abundance
22 provided in Myers *et al.* (1998), but it is the best available information on abundance of that time, and
23 is used primarily to offer a relative comparison of abundances at that time with those of recent decades.

24 **SW-30**

25 The commentor’s confusion that “these are three very different management standards” exists because
26 it may be assumed that only one standard could apply at a time, rather than that all standards must
27 apply simultaneously. The Proposed Action contains multiple constraints that must all be achieved
28 simultaneously, rather than as a system under which fisheries can be conducted whenever any one of
29 the constraints is met. In actuality, as described in Section 5 of the Proposed Action (DEIS Appendix
30 A), and DEIS Subsection 2.3.1 (*Alternative 1 – Proposed Action/Status Quo*), a fishery may be
31 conducted only if more than 50 percent of the impacts are from harvestable runs, and the aggregate of

1 fisheries impacts does not exceed the Rebuilding Exploitation Rate (RER) ceilings, and the aggregate
2 impacts of southern U.S. fisheries does not exceed Pacific Salmon Treaty guidelines. Directed chinook
3 salmon fisheries might be conducted only if the projected escapements exceed the upper thresholds and
4 the aggregate of fisheries impacts does not exceed the RER ceilings. Each fishery must be agreed to by
5 the co-managers as part of an overall regime, and additional constraints on the exploitation rate ceiling
6 apply when the abundance of any management unit or population is critical. Aside from some
7 ceremonial and subsistence, and research fisheries (which would also occur under Alternative 1A), this
8 situation is not anticipated to be encountered except perhaps in the Green, Nisqually and Skokomish
9 Rivers during implementation of the Proposed Action. Fisheries are restricted to incidental-only harvest
10 of chinook salmon whenever more than 50 percent of the resulting fishery-related mortality will accrue
11 to management units and species without harvestable surpluses. In most cases over the last five years
12 (1999–2004), the exploitation rates for the adopted fishing regime have been considerably less than the
13 “maximum amount” allowed in the DEIS.

14 See responses to comments SW-5 and SW-31.

15 **SW-31**

16 NMFS must evaluate the Resource Management Plan that is provided by the co-managers. If NMFS
17 finds that the Proposed Action meets the criteria of Limit 6 of the 4(d) Rule and will not appreciably
18 reduce the likelihood of survival and recovery, then it must issue that finding and does not have the
19 authority to require changes to the Proposed Action. The use of critical numbers is an element of the
20 Limit 6 criteria (50 CFR 223.203[b][6][i]) to demonstrate that the RMP is consistent with the concept
21 of viable and critical thresholds in the Viable Salmonid Population document (McElhane *et al.* 2000).

22 NMFS would expect that the information would change as management reports are updated with new
23 and better information. The change in the status of the Dosewallips is a good example. The Puget
24 Sound Technical Recovery Team (TRT), the group charged by NMFS to define the population
25 structure of the listed ESUs in Puget Sound and to provide technical assistance for recovery planning,
26 revised its earlier assessment of the structure of the mid-Hood Canal chinook populations in January,
27 2004 (PSTRT 2004). The TRT had concluded in an earlier report (PSTRT 2002b) that the Hood Canal
28 region of the ESU comprised two populations: the Skokomish and the Dosewallips Rivers. In its latest
29 report, the TRT has revised its assessment and now concludes the Dosewallips is part of a larger
30 population comprised of the Dosewallips, Hamma Hamma and Duckabush Rivers (PSTRT 2004). The
31 co-managers revised their RMP to reflect this new, best available, information. NMFS has also

1 incorporated the new information into its evaluation of the RMP, as it is tasked with using the best
2 available information in its assessments.

3 Lastly, management standards are not provided in the commentor's description of Alternative 1A. See
4 responses to comments SW-1B, SW-1D, SW-1E.

5 **SW-32**

6 NMFS must evaluate the Resource Management Plan that is provided by the co-managers. In its
7 Proposed Evaluation and Pending Recommendation, NMFS has evaluated the co-managers plan using
8 the best available information regarding the expectation of conditions over the proposed duration of the
9 plan (2005–2009), and evaluated the outcome against NMFS' standards for listed Puget Sound chinook
10 salmon. If NMFS finds that the Proposed Action meets the criteria of Limit 6 of the 4(d) Rule and will
11 not appreciably reduce the likelihood of survival and recovery, then it must issue that finding and does
12 not have the authority to require changes to the Proposed Action. NMFS' Proposed Evaluation and
13 Pending Determination of the co-managers' Puget Sound Chinook Harvest Resource Management
14 Plan, as proposed to be implemented during the 2005–2009 fishing seasons, is that it is consistent with
15 the criteria of Limit 6 and would not pose jeopardy to the Puget Sound Chinook ESU.

16 **SW-33**

17 Development of data with which to manage Puget Sound chinook salmon has been an ongoing
18 endeavor since the rulings of U.S. v. Washington. Work toward a comprehensive approach to Puget
19 Sound chinook salmon harvest began in the late 1980s, when data began to be available with which to
20 evaluate harvest impacts. When it became apparent that stocks were not faring well, the co-managers
21 began development of a new management framework, represented by earlier versions of the Puget
22 Sound Comprehensive Chinook Management Plan's Harvest Management Component, in spite of a
23 lack of complete data in some cases. The co-managers' decision to change to exploitation rate
24 management was carefully considered, after assessment of risks and benefits of different management
25 approaches (personal communication with Teresa Scott, WDFW, Salmon Resource Policy Analyst, and
26 Will Beattie, NWIFC, Salmon Recovery Coordinator, July 30, 2004). This includes consideration of
27 economic, social and cultural impacts as well as biological factors.

28 A comprehensive chinook salmon management plan was implemented initially in 1997. Subsequent
29 Puget Sound chinook salmon escapements indicate that the reduced exploitation rates and other harvest
30 management actions resulting from implementation of that Plan has contributed to the stabilization and
31 increase in Puget Sound chinook escapements (NMFS 2004a; NMFS 2004b). Revisions to the

1 management framework have been made in subsequent years as new information became available.
2 The most recent version of the management framework is the Proposed Action for the 2005–2009
3 fishing seasons, evaluated in the DEIS. Also see responses to comments SW-1A, SW-1F, SW-4, SW-8,
4 SW-10, SW-11, SW-13, SW-14, SW-17 and SW-27.

5 CEQ’s Forty Most Asked Questions 6a acknowledges that “NEPA does not require that an agency
6 adopt the most environmentally preferable alternative but that the impacts are disclosed in a full and
7 fair manner” (CEQ Regulations §1502.9 and 15002.16), and that the agency provides a clear record of
8 the basis of its decision “including consideration of economic and technical considerations and agency
9 statutory missions”(CEQ Regulations §1505.2[b]).

10 Also see response to comment SW-32.

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Native Fish Society (NFS)

Letter of Comment

NATIVE FISH SOCIETY

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May 21, 2004

Ms. Susan Bishop, Team Leader
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Re: Puget Sound Chinook Harvest Resource Management Plan Draft Environmental Impact Statement

This letter is to provide comments on the referenced Draft EIS.

1. The range of alternatives is very unrealistic and by their choice appears to have forced the selection of the "status quo" alternative as the preferred alternative. Including the unimaginative alternative for "no harvest." This alternative does not provide a decision-maker with realistic information about harvest management possibilities. It is a worthwhile exercise to generate information for such a strategy, but it should have been a side-analysis rather than an assessed alternative.

2. It is our position harvests should be managed to sustain wild populations, based on weak stock management. Each river reach should have spawner escapement goals and harvest management regimes should be designed to deliver those escapement goals. These goals would be specific to each stock to achieve the standards under the Viable Salmonid Population (VSP) policy annually.

The status quo objectives for managing on a "management unit" basis will not provide sufficient protection or rebuilding of specific populations of concern. The Oregon Coastal Natural coho (OCN) harvest management approach for testing environmental conditions facing broodstocks has shown to be workable and it could be extended to the Puget Sound Chinook stocks. The alternatives for escapement goal management "with no fisheries restriction" and "with terminal fisheries only" are akin to the OCN management approach, but when properly implemented through restricted fisheries are more acceptable preferred alternatives. Alternative 2 especially could have been better characterized so as to have integrated harvest management similar to Alternative 1, but with population level escapement goals. The Draft EIS design for both Alternative 2 and 3 seemed to have a predisposed purpose for showing drastic fisheries reductions so as to avoid further consideration.

3. There is too much emphasis on only meeting minimum protection requirements for the ESA listed stocks. Much more can be done for a harvest management regime that is in conjunction with habitat improvement plans. The Draft EIS attempts to separate the two efforts, which will

mean each cause of mortality will assume the other has a workable solution. A mortality profile for each stock must be determined including harvest impacts. There must be an overriding understanding that has mutual dependence and triggers for action when both efforts are out of balance. An annual report on ESA-listed chinook taken in the fishery must be provided to the agencies and public each year to track harvest impact. This numerical harvest accounting would be in several forms. One would be an overall numerical take, take by ESU, and take by each distinct population in the ESU. Only by doing this numerical accounting can the NMFS, agencies and the public understand the effect of harvest on rebuilding and recovery of chinook.

4. The Draft EIS fails to include the flexibility and influence on Alaskan and Canadian fisheries allowed through impact sharing arrangements annually determined by the Pacific Salmon Commission (PSC). Methods in the Draft EIS simply assume 2003 fisheries conditions or higher impacts without setting objectives and outlining procedures for improved implementation of impact sharing arrangements. The myopic view for only regulating harvest within Puget Sound ignores the coordinated management approach built into agreements for ocean fisheries. It is much more difficult to outline objectives and processes for improving on coordinated management than just assuming "that is the way things are." In fact, the North Pacific Fishery Management Council (NPFMC), Pacific Fishery Management Council (PFMC), and the PSC were specifically instituted to handle such arrangements.

5. The reliance on hatcheries to compensate for degraded habitat means harvests are pushed to terminal areas to minimize impacts on wild origin populations. Objectives and processes should have been explored and assessed that change the hatchery reliance practices. Furthermore, the EIS should document, using the scientific literature, the assumption that hatcheries can compensate for habitat degradation. Since the purpose of the ESA is to recover native wild salmonids in their natural habitat, the use of hatcheries to compensate for habitat degradation has to be placed in context for each ESA-listed population.

6. Up to three-quarters of harvest mortality for Puget Sound origin Chinook occurs incidentally outside of Puget Sound. This can mean that Indian treaty rights for harvestable fish can be allocated geographically and need not rely on post-ocean migration fisheries for the harvests. There may be creative opportunities for other area harvesting when fish condition is better suited for markets that would bring higher value to the Indian fishing industry. The procedures for such arrangements should have been explored and economically assessed.

7. It appears a significant portion of the Indian harvests are only for the purpose of selling eggs and fish carcass disposition practices were not described. There is no assessment of new regulations that might be needed to protect water quality or have better utility of the carcasses. Their utility for stream nutrient augmentation in streams should specifically be addressed. The EIS must consider the Clean Water Act requirements in disposing of carcasses.

8. The discussion for alternatives' consequences is remarkably devoid of economic discussion. Numbers abound for measurements of net economic value and regional economic impacts, but there are no measurements or even qualitative discussion of societal economic worth given to non-use of this fish resource. The Draft EIS does not meet standards as called for in NMFS guidelines for preparing economic analysis, let alone a host of federal executive orders, acts, regulations, and instructions to include these types of discussions. Even if data is sparse and

budgets are short for modeling non-use impacts, magnitudes and distribution effects can be explained and assessed in non-numerical ways.

The Draft EIS should not be considered complete until these issues are fully examined and discussions included in a re-issue of a new draft.

Thank you for the opportunity to comment and we look forward to the agency's full compliance with the court decisions and mandated requirements for EIS preparation.

Sincerely,

A handwritten signature in black ink, reading "Bill M. Bakke", followed by a horizontal line.

Bill M. Bakke, Director

RESPONSE TO COMMENTS RECEIVED FROM NATIVE FISH SOCIETY (NFS)

NFS-1

The range of alternatives considered by NMFS was in part mandated in a settlement agreement (Washington Trout v. Lohn) that challenged the adequacy of NMFS' NEPA analysis on an earlier 4(d) determination for a Puget Sound chinook salmon harvest plan. NMFS was therefore required to include them in its range of alternatives. Other alternatives that were considered but eliminated from detailed study are discussed in DEIS Section 2, *Alternatives Including the Proposed Action*.

NFS-2

Comment noted.

NFS-3

Data is currently insufficient to establish escapement goals for each river reach. In addition, such an approach might not be practical or desirable to implement. Environmental and habitat conditions are highly variable from year to year, and spawning adults seek out the best habitat as defined by the conditions in that year. NMFS agrees that harvest management plans should be consistent with the concepts in the Viable Salmonid Population (VSP) document regarding abundance, productivity, diversity and spatial structure, and this is a requirement of any resource management plan provided to NMFS under the 4(d) Rule. NMFS' evaluation of how the RMP is consistent with the VSP criteria can be found in its Proposed Evaluation and Pending Recommendation (NMFS 2004).

DEIS Alternative 3 evaluates the implementation of a fixed-escapement goal approach to harvest management with escapement goals at the individual population level. Although Alternative 3 also mandates terminal fisheries only, removing the geographical restriction on the fisheries would not change the results because the anticipated abundances for many populations would preclude mixed-stock fisheries under the fixed-escapement goal approach represented by Alternative 3. The Proposed Action (Alternative 1) also uses a weak-stock management approach, although harvest management objectives are specific to management units. The twenty-two Puget Sound chinook populations identified by the Puget Sound Technical Recovery Team (PSTRT 2004) are divided into 14 management units, eleven of which are explicitly managed for the weakest population in the management unit. Therefore, the range of alternatives evaluated in the DEIS is inclusive of the approach suggested by the commentor.

NFS-4

The harvest management approach used to manage Oregon Coast Natural coho (OCN) is a matrix of parent and grandparent escapement measured against a marine survival index to yield a ceiling exploitation rate for an annual adult abundance forecast. For Puget Sound chinook salmon, parent and grandparent escapement estimates are available. A marine survival index for chinook salmon is more difficult to determine than for coho, because chinook are in marine waters for several years and each age class will experience different environmental conditions and survival rate factors, particularly early marine survival conditions. The marine survival index used for OCN coho is the “jack” (age 2) return to the spawning areas as an indication of the return of adult age 3 coho the next year. Using jack coho as an indicator of adult survival rate is much more reliable for coho than it is for chinook salmon where the “jack” (age 2) maturation rate is very low compared to the number of fish returning as age three- to five-year-olds. For example, two-year-old Skagit summer and fall chinook salmon comprised 2 percent of the mature run for the 1987–1991 brood years (personal communication with Rebecca Bernard, Swinomish Tribe, Fisheries Biologist, February 4, 2004).

Accounting for jack chinook salmon in Puget Sound terminal fisheries and in escapement is difficult and highly variable between river systems (see Appendix E of DEIS Appendix A, the Resource Management Plan). Because of their small size, jack chinook salmon are not caught in significant numbers in net fisheries, and are difficult to enumerate accurately during spawning ground surveys. For most systems in Puget Sound, terminal area age data necessary for estimating a marine survival index is not available until after the pre-season forecasting period for the upcoming management year.

Finally, the OCN matrix system is designed to work across a wider range of escapement, ocean survival and abundances than what is expected for Puget Sound chinook salmon across the duration of the Proposed Action (2005–2009). With the Proposed Action only covering the next five fishing seasons, it is likely that abundance and survival conditions will be similar to those in recent years. The Proposed Action is in a sense similar to the OCN matrix approach where its tiered exploitation rates (e.g., RER, CERC) approach depends on critical, low, or normal abundance status.

NFS-5

Insufficient detail is provided in this comment for use in analyzing the suggested approach. It is unclear how the commentor defines “restricted” fisheries or what the magnitude of the fisheries would be. The commentor characterizes the fixed-escapement-goal alternatives in the DEIS (Alternatives 2 and 3) as similar to the OCN approach, however, the OCN approach is exploitation-rate based, not escapement goal based. The OCN approach uses escapement thresholds of parent and grandparent escapements, in

1 combination with predictions of marine survival, to determine what exploitation rate is appropriate in a
2 given year. This approach is similar to that of the Proposed Action, which uses escapement thresholds
3 to determine which level of exploitation rate is appropriate in a given year. CEQ Regulations specify
4 that “Comments on an environmental impact statement...shall be as specific as
5 possible...” (§1503.3[a]), and “When a commenting agency criticizes a lead agency’s predictive
6 methodology, the commenting agency should describe the alternative methodology which it
7 prefers...” (§1503.3[b]). Also see response to NFS-3.

8 **NFS-6**

9 The integration of habitat, hatchery and harvest actions is the subject of a recovery planning process
10 currently underway in Puget Sound through a forum called the Shared Strategy (see DEIS Subsection
11 1.10.4, *Puget Sound Recovery Planning*), and is outside the scope of the Proposed Action. Completion
12 of the recovery plan and decisions regarding the form and timing of recovery efforts described in the
13 recovery plan will dictate the kinds of harvest actions that may be necessary and appropriate in the
14 future. However, NMFS has integrated an assessment of current habitat conditions in the development
15 of standards used to evaluate the DEIS alternatives. NMFS has done this to ensure that its standards are
16 consistent with the productivity and capacity of the habitat for specific Puget Sound chinook
17 populations where that information is available (see DEIS Subsection 4.3.1, *Threatened and*
18 *Endangered Fish Species*, page 4-10).

19 Aspects of the integration between habitat actions and the proposed harvest management action are
20 discussed as cumulative effects in DEIS Subsections 4.3.8 (*Indirect and Cumulative Effects*), and 4.8.6
21 (*Cumulative Effects on Wildlife*).

22 **NFS-7**

23 The Proposed Action includes annual reports provided to NMFS that report numerical harvest
24 accounting by fishery, adult spawner escapement estimates, and estimates of exploitation rate on each
25 Puget Sound chinook salmon management unit and population. Initial estimates of commercial harvest
26 provided in annual reports are preliminary, and are finalized in subsequent years. Catch estimates can
27 be reported immediately post-season for a few recreational fisheries for which creel surveys estimate
28 recreational catch in-season, but actual post-season catch estimates for most recreational fisheries are
29 not available until one to two years after the fishery occurs.

30 Population- and management-unit-specific exploitation rate information used to measure performance
31 of the Resource Management Plan become available two to four years after fisheries are completed.

1 Post-season Fishery Regulation Assessment Model (FRAM) assessments are used to report this
2 information by management unit or population when data become available. The Proposed Action
3 suggests FRAM be updated to incorporate this new information every five years.

4 **NFS-8**

5 The assumptions used in the DEIS modeling were based on the terms of the Pacific Salmon Treaty
6 Chinook Annex and information exchanged with Canadian harvest managers that occurs through the
7 Pacific Salmon Commission and the annual implementation of the terms of the Annex. The objectives
8 and procedures for improved implementation of impact sharing arrangements is the subject of the terms
9 of the Pacific Salmon Treaty Chinook Annex negotiated in 1999 between Canada and the U.S. That
10 agreement is not part of the Proposed Action, although it influences the shaping of annual fishing
11 regimes in Puget Sound. Therefore, it is outside the scope of the Proposed Action, but impacts on Puget
12 Sound chinook salmon in Canadian fisheries must be taken into account when evaluating the
13 alternatives in the DEIS. NMFS cannot assume that Canada will manage its fisheries in a different
14 manner than specified in the terms of the Annex. Therefore, NMFS attempted to define a reasonable
15 range of outcomes consistent with that agreement (CEQ Regulations 1502.14 and CEQ Forty Most
16 Asked Questions 1b), and describes the rationale behind these choices.

17 Also see response to comment SW-18.

18 **NFS-9**

19 In actuality, chinook salmon harvests that target hatchery-origin fish occur throughout marine and
20 freshwater (pre-terminal and terminal) areas of Puget Sound. Harvests in all Puget Sound areas where
21 chinook salmon may be affected are managed to protect the weakest management unit. Alternatives
22 that explore the effects of decreases and increases in the hatchery production of juvenile chinook
23 salmon will be included in a separate, ongoing EIS for Puget Sound region hatchery programs.
24 Evaluations of these alternatives within the hatchery EIS will consider effects on fisheries harvests,
25 fishery economic value, and natural and hatchery-origin chinook salmon population abundances.

26 In addition to the need to avoid duplication of issues that will be more appropriately addressed in the
27 hatchery EIS, NMFS did not consider hatchery program adjustment effects in this EIS because any
28 changes in hatchery practices would have little practical effect on the Puget Sound Chinook harvest
29 management framework under consideration. The Proposed Action has a five-year duration.
30 Considering that chinook salmon recruit to fisheries primarily as four-year-olds, the effect of any
31 hatchery adjustments implemented now on harvests would be experienced overwhelmingly in the final

two years of the five-year plan (2008 and 2009). To the extent that changes in hatchery practices would be reflected in earlier age classes, this would be taken into account in annual pre-season fishery planning. Integration of habitat, hatchery, and harvest actions to effectuate recovery of the listed Puget Sound Chinook ESU is the subject of an on-going recovery planning process but outside the scope of the action evaluated in this EIS. Also see responses to comments SW-19, SW-22 and NFS-6.

It is unclear from this comment in what context the EIS should document the assumption that hatcheries can compensate for habitat degradation. Such additional documentation needs to be connected with a specific alternative to be evaluated or a specific assumption made in the EIS analysis. Without this information, it is unclear what specific information is missing from the EIS. The potential beneficial and adverse effects of hatchery programs have been summarized in numerous scientific publications and literature reviews (for example, Lichatowich and McIntyre 1987; Hard et al. 1992; Witty et al. 1995; Busack and Currens 1995; Waples 1999), and discussed in DEIS Subsection 3.3.8, *Hatchery-Related Fishery Effects on Salmon*. One beneficial effect of hatcheries identified in all of these documents is their enhanced ability to bolster the abundance of adult salmon relative to naturally-spawning fish due to increased egg-to-smolt survival rates afforded by the hatchery environment. Given extensive habitat degradation that has occurred within the Puget Sound region (WDNR 1998), hatchery production has been necessary to at least partially off-set natural chinook salmon production that has been lost.

NFS-10

Tribal fisheries are limited in geography by treaty and through court order (see DEIS Subsection 3.4, *Tribal Treaty Rights and Trust Responsibilities*, U.S. v. Washington: 384 F. Supp. 312). In addition, tribal fishing is as much a cultural activity as an economic one, so “higher economic value” is not the only value considered when planning fisheries. Indian treaties signed by the federal government guaranteed continued access to fisheries for future generations. The Treaty of Medicine Creek includes a provision typical of that found in treaties with many Northwest tribes:

“The right of taking fish, at all usual and accustomed grounds and stations, is further secured to said Indians, in common with all citizens of the Territory,..” (Treaty of Medicine Creek, Article III, 10 Statute 1132. *See also*, Treaty of Point Elliott, 12 Statute 927; Treaty of Point-No-Point, 12 Statute 933; Treaty of Neah Bay, 12 Statute 939; and Treaty of Olympia, 12 Statute 971, which are generally known as the “Stevens Treaties”).

Provision of fishing opportunity in all usual and accustomed fishing grounds is therefore an essential objective of the Resource Management Plan, and is central to fulfilling NMFS’ trust responsibility. It

1 would be inconsistent with the Purpose and Need for the Proposed Action to examine re-location of
2 tribal fisheries.

3 **NFS-11**

4 Presence of salmon carcasses in streams is a natural component of stream ecology. Nevertheless, the
5 Clean Water Act specifically prohibits the placement of “biological materials” unless an
6 environmental review is done indicating no significant adverse environmental effect. WDFW
7 completed a State Environmental Policy Act process, and issued a Declaration of Non-Significance on
8 May 21, 1997 prior to implementing its carcass dispersal activities.

9 In some fisheries, for both treaty Indian and non-treaty fishers, sales of eggs can be more lucrative than
10 sales of the whole fish. This is primarily true for pink and chum salmon – chinook salmon eggs are a
11 relatively small proportion of total egg sales. Egged carcasses associated with commercial harvest are
12 not used for stream fertilization because of logistical constraints. The infrastructure required to collect
13 and distribute egged carcasses from commercial fisheries is not in place, and would be much more
14 complicated than that required for hatcheries. Hatcheries act as central collection facilities because
15 large numbers of fish in a region return there. The fishermen and commercial buyers are dispersed
16 throughout Puget Sound when fisheries are open and their location changes depending on factors such
17 as the pattern of catch, price paid, and weather. A significant number of carcasses are sold along with
18 the eggs and processed (e.g., smoked, used for bait, fishmeal), or taken home as subsistence catch by
19 the fishermen. Generally, disposition of carcasses into fresh or marine waters by fishermen is not
20 known to cause any significant water quality problems. However, mass disposal of salmon carcasses
21 into marine waters has been identified as a specific problem in some local areas of Puget Sound. In
22 areas where disposal of salmon carcasses has been identified as a problem, the co-managers are
23 developing new markets for carcasses otherwise discarded and encouraging buyers to retain the
24 carcasses to facilitate proper disposal. In addition, WDFW and the Puget Sound tribes work
25 cooperatively with a number of volunteer groups who help to distribute carcasses from hatcheries into
26 streams. Applications to WDFW for carcass distribution are reviewed within WDFW for consistency
27 with fish health and carcass distribution guidelines (Michael, Jr. 1997).

28 It is an open question whether the nutrient load from salmon carcasses is significantly different now
29 than it was historically, when all the natural runs were healthy.

NFS-12

NMFS acknowledges that protecting, restoring, and enhancing salmon and other aquatic resources affected by the Proposed Action generate non-use values. Non-use values associated with protecting salmon resources in the State of Washington have been the focus of several studies in recent years (Olsen et al., 1991; Loomis, 1996b; and Layton et al., 1999).

NMFS' guidelines for preparing economic analysis were developed for the purposes of analyzing regulatory actions in Regulatory Impact Reviews and Regulatory Flexibility Analyses. These guidelines, primarily structured around a benefit-cost analytical framework, allow for considering non-use values in evaluating regulatory actions. The Proposed Action is not considered a regulation requiring the co-managers to comply with specific regulations; instead, the EIS states that if the fisheries are conducted consistent with the Plan, then the co-managers of the fisheries will be exempt from take regulations. Fisheries also could occur in other ways and not be in violation of the ESA. Consequently, strict adherence to the guidelines in preparing the economic analysis, including evaluating non-use values, is not mandated. In addition, the guidelines' primary focus on determining the "expected direction in net benefits to the nation" of the Proposed Action is considered to be an analytical objective beyond the scope of the EIS.

In recognition of the relevance of non-use values pertaining to fishery resources, particularly listed species, the Affected Environment section, *Economic Activity and Value* (Section 3.6) has been modified to include a brief description of non-use values and how they relate to the Proposed Action and alternatives. Because the effects of the alternatives on the recovery of listed species cannot be determined with sufficient certainty to reliably estimate non-use values associated with recovery, potential effects of implementing the alternatives on non-use values are not evaluated in the Environmental Consequences section.

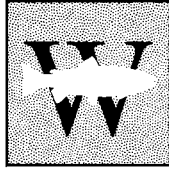
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Washington Trout (WT)

Letter of Comment

W A S H I N G T O N T R O U T

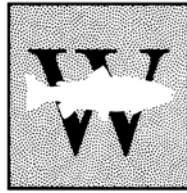


Comments Regarding:
*Puget Sound Chinook Harvest Resource Management
Plan; Draft Environmental Impact Statement*
National Marine Fisheries Service, April 2004

Submitted July 1, 2004

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W A S H I N G T O N T R O U T



Part 1. Comments Regarding:
*Puget Sound Chinook Harvest Resource Management Plan; Draft
Environmental Impact Statement*
National Marine Fisheries Service, April 2004

Washington Trout, July 1, 2004

INTRODUCTION

Washington Trout has reviewed the *Puget Sound Chinook Harvest Resource Management Plan; Draft Environmental Impact Statement* (DEIS) and relevant accompanying documentation. We have also reviewed the relevant RMP, the *Puget Sound Comprehensive Chinook Management Plan: Harvest Management Component*, submitted to NOAA by the Puget Sound Treaty Tribes and Washington Department of Fish and Wildlife (co-managers). We have also reviewed relevant fisheries-management records and scientific literature pertinent to a review of both the RMP and the DEIS.

We find that the DEIS is inadequate in several fundamental respects. NEPA requires a thorough and fair analysis of the potential environmental impacts of the “Proposed Action” as well as alternatives to the Proposed Action. The dismissals of several potential alternatives to the Proposed Action that were proposed in scoping appear to be arbitrary. In the discussion that does occur regarding alternatives to the Proposed Action, the DEIS fails to consider and analyze the alternatives to the Preferred Alternative in sufficient detail and without bias. The analysis of the Preferred Alternative fails to adequately consider or evaluate its full environmental impacts, particularly the impacts of the RMP on Threatened Puget Sound chinook. The economic analyses and the evaluation of the affected environments in the DEIS fail to include any evaluation of the full economic, social, and environmental costs of chinook harvest under each of the Alternatives. Of particular importance in the economic analyses is the absence of any consideration of opportunity costs associated with the Preferred Alternative and of benefits to chinook harvest and chinook conservation that might reasonably be made available by the adoption of one or another alternative to the Preferred Alternative.

In view of the considerable deficiencies in these regards we believe that the DEIS is unacceptable and should be withdrawn and revised to remedy these basic failures.

KEY ISSUES

I. Inadequacy of Alternatives Analyses

I-1. Inappropriateness of the Adopted Environmental Baseline: NOAA Fisheries attempts to make transparent the connection between the DEIS – including several of its particulars – and NOAA’s July 2002 Settlement Agreement with Washington Trout re *Washington Trout v. Lohn*. The basis for Washington Trout’s challenge of NOAA’s determination on the 2001 RMP in *Washington Trout v. Lohn* was NOAA’s clear failure to comply with NEPA requirements to perform a full Environmental Impact Statement before finalizing its ESA take-authorization processes. But now, NOAA proposes to use as a “baseline against which the environmental, social, and economic consequences of the [proposed] action are compared,” the “harvest management practices and baseline environmental conditions” that have existed *since* NOAA’s inappropriate determination to grant take-authorization for the RMP in 2001. Had NOAA undertaken to comply with NEPA in 2001 it could not have employed the yet-to-be-initiated RMP as the environmental baseline against which to evaluate the changes likely to occur if the RMP were adopted. NOAA proposes to reward itself for failing to comply with NEPA in 2001 by using the conditions resulting from that failure to imply that the new proposed action “most closely approximates” current environmental conditions, suggesting the least impacts. It is inappropriate and unfairly biased in favor of the RMP for NMFS to now use that same RMP harvest regime as the appropriate baseline for the DEIS.

The 2001 RMP-determination was the first take-authorization NOAA had awarded for harvest-related impacts to PS chinook since the ESU had been listed as Threatened in 1999, representing and suggesting significant reevaluation and modification of then-current “harvest management practices and baseline environmental conditions.” Using the baseline proposed in the DEIS leaves still-unexamined the potentially significant changes in environmental impacts that resulted from NOAA’s inappropriate 2001 determination. The harvest regime proposed by the RMP is a matter of controversy, especially as regards the conservation and recovery of PS chinook; it is at best premature to employ it as a baseline to argue the Preferred Alternative would effect no change in the environmental status quo. Besides leaving the actual relevant changes in environmental impacts unexamined, this places an unfair burden on any other alternative by characterizing such an alternative as one that would endeavor to *alter* the status quo.

The language and tone of the DEIS overall suggest an attempt to justify the co-managers’ RMP for chinook harvest, rather than present a clear and balanced overview of several alternative approaches to the management of harvest-related impacts on the ESA-listed Puget Sound chinook salmon ESU and its component populations. For example, page-i of the Executive Summary states “The Resource Management Plan also includes implementation, monitoring, and evaluation procedures designed to ensure that fisheries are consistent with the objectives of the Resource Management Plan for conservation and use.” Such statements are inappropriately presumptive and favorable to the Preferred Alternative. Moreover, this statement is unsupported by a fair and critical review of the harvest RMP, which will be discussed below.

I-2. Failure to Justify the Several Purposes and Needs; Failure to Consider Potential Inherent Incompatibilities among Some Purposes and Needs: Pages i and ii of the Executive Summary list eight (8) constraints that the proposed action must satisfy. No justification for this suite of

constraints is provided, yet this assertion (viz., that all of these constraints must be satisfied) is crucial to the argument in support of the Preferred Alternative.

In addition, it is simply assumed that all eight constraints are mutually compatible, an assumption that is far from obvious. For example, among the constraints are the following: “Provides equitable sharing of harvest opportunity among tribes, and among treaty and non-treaty fishers pursuant to U.S. v Washington and U.S. v. Oregon; “Manages risk associated with abundance estimation, population dynamics, and management implementation”; and “Optimizes harvest of abundant Puget Sound salmon ... while protecting weaker commingled chinook stocks”. Some argument is required to even make plausible the claim that management of the risks mentioned and protection of “weaker commingled chinook stocks” in mixed stock (including mixed species) fisheries is possible in conjunction with optimal harvest of other salmon stocks and with complying with the sharing of opportunity required under U.S. v Washington and U.S. v. Oregon. (It is certainly not clearly supported that the RMP successfully reconciles this difficult and contradictory standard.)

Further, it is not at all obvious that such constraints have equal weight when devising a harvest management regime capable of satisfying ESA concerns. Clearly, any such list is likely to require some degree of prioritization among the components of the list. If the DEIS asserts such a list of constraints it should also prioritize them. The DEIS is remiss in failing to do this.

The DEIS attempts to argue that among the Alternatives considered, *only* the Preferred Alternative satisfies the purpose and need as characterized by the eight conditions. If true, this would seem to be inappropriate. Is the assertion of the DEIS that *ONLY* the preferred alternative, of all other imaginable alternatives, is capable of meeting the purported purpose and need? There are none more expensive, more complicated, less efficient? Surely, the purpose and “need” must be capable of being characterized more generally and the Alternatives described in such a way that they can be understood (and subsequently evaluated) as different ways in which and different degrees to which the basic purpose can be fulfilled. Hence, we argue that the DEIS has failed to provide a properly unbiased description of the purpose and need for the contemplated harvest action and has therefore failed to provide an appropriate context in which the Alternatives can be fairly considered and evaluated.

I-3. Biased Consideration and Arbitrary Dismissal of Alternatives Proposed in Scoping: In its specification of “criteria applied in narrowing the range of alternatives included”(page 2-2), the DEIS employs the description of the program purpose and need -- characterized by the eight constraining conditions described in Section I above – to arbitrarily dismiss reasonable alternatives presented during scoping.

A tribal-only fisheries alternative was presented during scoping. This alternative would “provide the 4(d) Rule take limitation on harvest activities only for treaty tribal fishing, would estimate the level of tribal fisheries required to satisfy federal trust responsibilities to the Puget Sound treaty tribes, and would configure those fisheries for all salmon species” (p. 2-2).

Such an alternative would clearly satisfy NMFS trust responsibilities to Puget Sound Treaty Tribes and would generally be expected to result in both a reduced overall level of harvest-

impacts to Puget Sound populations of the listed chinook ESU and to a reduction in some of the impacts arising from mixed stock fisheries in marine waters. It would also require a detailed estimation of the level and distribution of hatchery production necessary to satisfy such a fishery.

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The DEIS appears to place a great deal of weight on NOAA's trust responsibilities as a constraint on acceptable alternatives while at the same time arguing that the additional levels of fishing impacts permitted under the Preferred Alternative are consistent with the conservation and recovery of the listed chinook ESU. Describing and evaluating a tribal-only alternative in detail would appear to be a useful exercise that would provide a valuable contrast with the Preferred Alternative. This would enable the public to clearly understand the level of fishing that NMFS believes is required to satisfy trust responsibilities and to understand the additional levels of harvest and additional levels of impact that arise from satisfying the other features of the alleged purpose and need that require non-tribal harvest. The DEIS steadfastly refuses to do this, resorting to an arbitrary dismissal of the suggested alternative.

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This alternative is not consistent with the purpose and need of the Proposed Action. Since the purpose is to put in place a resource management plan under Limit 6 of the 4(d) Rule (i.e., a joint state-tribal plan), it would not be reasonable to expect that the Washington Department of Fish and Wildlife and the Puget Sound tribes would put forward a joint plan under Limit 6 that would include no provision for non-tribal fishing. A fishery plan involving tribal-only fisheries would reasonably be expected to be provided to NMFS for evaluation under the Tribal 4(d) Rule. (2-2)

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This line of reasoning is entirely unconvincing, arbitrary and capricious. NOAA should act on its responsibilities under the ESA and NEPA to thoroughly analyze and influence the technical and biological elements of resource-management proposals that could potentially impact the status and recovery of PS chinook. Instead, the DEIS attempts to employ rhetorical and legalistic acrobatics to suggest that NOAA has met some bare-minimum interpretation of its responsibility. The dismissal of this alternative is also not compelling on its face.

There is no organic reason why the Washington Department of Fish and Wildlife (WDFW) cannot or would not participate in developing such a plan on behalf of the co-managers (and thus submit it under Limit 6) in order to discharge its over-arching (Washington-State) constitutional responsibility to manage the fish and wildlife resources of the state for the posterity of the citizens of the state. There is no reason for believing *a priori* that a tribal-only fisheries plan might not be the preferred alternative on the part of a reasonably-responsible WDFW when balancing conservation, legal, and equity concerns with respect to the treaty tribes.

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The DEIS appears to suggest that WDFW represents only one narrow interest group of consumptive users of the fishery resource – non-tribal commercial and sport anglers – and uses that unsupported suggestion to label WDFW participation in such a plan “unreasonable.” Even if it were true that WDFW represented only harvest-fishers, the department still would certainly consider participating in a tribal-only RMP if for no other reason than to reconcile potential forgone-opportunity issues that have been matters of controversy between the co-managers in the past. But this is an entirely inappropriate view of WDFW and of its legal responsibilities with regard to the fishery and aquatic resources of the Washington.

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More importantly perhaps, NOAA Fisheries surely has equal if not greater obligations, and there is no reason that NMFS might not recognize that a treaty-only fishery is required and even may be the most equitable under circumstances in which ESA-listing of Puget Sound salmon ESUs was warranted. It is neither at all clear to this review that NOAA has any particular obligation to accept or reject alternatives proposed in scoping only as a matter of whole cloth. It seems reasonable to assume that NOAA Fisheries retains some discretion in deleting or adding elements to scoping proposals in order to shape and analyze reasonable and potentially valuable alternatives. It would not seem a huge leap for NOAA to have fashioned some variation of this alternative that might have appeared to it more plausible, even under its tortuously rigid interpretation of the 4(d) Rule. For instance, an alternative that considered tribal only mixed-stock fisheries combined with terminal-area tribal and recreational non-tribal fisheries would certainly appear to satisfy the standards for Purposes and Needs at least as well as the Preferred Alternative, would likely provide valuable contextual information for evaluating the relative environmental impacts of the Preferred Alternative, and would appear to *require* joint-participation of the co-managers in applying for take authorization.

In its discussion of Alternative 4, NOAA argues that before considering the implementation of an alternative precluding tribal fishing, it is constrained by several standards related to its Trust Responsibilities, including that “reasonable regulation of non-Indian activities” has not been considered first. This would appear to argue *for* an evaluation of some form of tribal-only or nontribal-restricted fishery as a more reasonable alternative to the proposed action, but NOAA games the 4(d) Rule to avoid having to make even that analysis. Finally, it should be noted that the likely desires or inclinations of take-authorization applicants may not be entirely relevant in this context, certainly not controlling. The co-managers appear to be disinclined to consider any alternative significantly different from the RMP, and it’s unlikely they would jointly submit a significantly different plan. Doesn’t that make analyses of Alternatives 2 and 3 as “unreasonable” as an alternative similar to the tribal-only alternative proposed in scoping?

A No Hatchery Augmentation alternative was also suggested during public comment. This is dismissed out of hand by the authors of the DEIS for reasons that are both arbitrary and confused. The DEIS argues the following:

A no-hatchery augmentation alternative would assume that hatchery augmentation programs and the fish produced from those programs do not exist. It has been excluded from further detailed analysis because it is not reasonable or practical. Even if the hatchery programs were discontinued in 2004, substantial numbers of hatchery fish from previous hatchery releases will return to Puget Sound in 2004 and over the next several years. It is not reasonable to expect that the co-managers would develop a resource management plan that did not provide for harvest of these hatchery fish, particularly since many of these fish were produced specifically for harvest. This alternative is also technically infeasible to assess with current tools and available data, since it is not yet possible to distinguish returning hatchery adults from wild adults for many Puget Sound chinook salmon populations. (2-3)

It is clearly uncharitable in the extreme to interpret a no-hatchery augmentation alternative as assuming or requiring the magical, instantaneous elimination of all hatchery fish of all ages and stages of development from the waters of Puget Sound and the Pacific Coast. It is incumbent upon NMFS under NEPA to provide a realistic and charitable interpretation of an otherwise reasonable alternative proposed by the public, not create a strawman caricature that is then ridiculed.

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Absent such a principle of charity there is no reasonable way for the interested general public to propose alternatives for serious consideration. Nor does such a lack of charity further the aims and purposes of NEPA that a consideration of environmental impacts provide a reasonable spectrum of alternative ways that *might* succeed in meeting the broad purposes of a proposed action while minimizing or eliminating undesirable collateral impacts. A range of alternatives should be fully and fairly assessed – even if those alternatives only partially meet the purpose and need – in order to provide a useful evaluation of the relative environmental impact from meeting the need, and determine not only the best balance between environmental conservation and meeting the need, but the relative value of meeting the need as now conceived. An examination of the relative impacts of alternatives that partially meet the need will be valuable in identifying the cost society at large or even proponents are willing to incur to meet particular, often subjective, “needs.”

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Certainly, a reasonable description can be provided for the elimination of chinook hatchery production in Puget Sound and Hood Canal and for the attendant development of a transitional fishery regime that would direct harvest at the remaining returning hatchery adults. It would seem that NOAA is required under NEPA to provide such a description.

NOAA proceeds to assert that the alternative is technically infeasible to assess due to the imperfect ability to distinguish returning adult hatchery chinook from natural-origin chinook. The statement is a *non sequitur*. If hatchery fish are not produced (the case under the proposed alternative here at issue) there is no issue as to whether hatchery fish can or cannot be distinguished. Under a charitable reading of the proposal in which a transitional harvest regime would be established to harvest the remaining returning cohorts of hatchery chinook, NOAA’s assertion is patently false in as much as all returning adult Puget Sound and Hood Canal hatchery chinook beginning with the current year (2004) are expected to be 100% marked so as to be entirely distinguishable from natural-origin adults.

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Consequently, the authors of the DEIS here simply fail to establish the claim that such an alternative “is not reasonable or practicable”.

The passage from page 2-3 quoted above continues as follows:

Finally, most of the reasons suggested for including this alternative (broodstock take, prey competition, loss of genetic fitness, and migration barriers) are not affected by fishery activities. An analysis of harvest activities will only provide information about the change in escapement, catch and exploitation rate, and would not provide the information necessary to address the reasons given for the request. These issues would be more appropriately addressed in a National Environmental Policy Act analysis of proposed hatchery operations,

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if necessary. A pending National Environmental Policy Act review is currently under development for the Puget Sound salmon hatchery program. Fishery-related hatchery issues, such as straying and possible over-fishing, are addressed in the alternatives evaluated in this Environmental Impact Statement. Therefore, it is not necessary to develop and analyze an additional alternative in order to evaluate them. (2-3).

It is simply false that harvest activities do not affect either broodstock take or genetic fitness of hatchery or wild chinook populations. For example, the Independent Science Advisory Board -- an independent scientific panel that is advisory to NMFS and to the Northwest Power and Conservation Council for fishery management issues in the Columbia River Basin -- in its extensive review of hatchery supplementation (“Review of Salmon and Steelhead Supplementation”, ISAB 2003-03; June 4, 2003) presented and discussed at length a population model for integrated hatchery-natural-spawning populations that evaluates the fitness impacts on wild populations of hatchery operations that involve different levels of spawning of hatchery fish in the wild and incorporation of natural-origin spawners into the hatchery broodstock. Among the factors that affect the impact of hatchery operations on the fitness of naturally-spawning populations are the harvest rates on the natural-origin fish as a fraction of the harvest rate on the hatchery-produced fish. (ISAB 2003-03, Section 4, pp. 40 – 46. See also, Goodman 2003 and Goodman 2004, in review for a more extended and technical presentation of the model).

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In addition, the distribution of harvest mortality not only affects escapement but, in the case of chinook salmon, can also affect the age-composition of the escapement. The age composition of spawning adults is an extremely important feature of chinook populations that is directly relevant to the survival and recovery of listed chinook that can be directly affected by harvest. Harvest impacts on the number and the age composition of spawning chinook and on the proportion of naturally spawning fish that are of direct hatchery origin (F1 hatchery fish) are directly relevant to genetic fitness issues and are direct impacts of hatchery production for harvest augmentation. Analysis of harvest actions are, for this reason alone, directly relevant to the evaluation of the proposed no-hatchery augmentation alternative.

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In the remainder of the quoted passage under discussion the DEIS implausibly asserts that the kinds of concerns that might motivate (and justify) consideration of the no-hatchery alternative are not appropriate concerns for a harvest EIS but rather for a review of “proposed hatchery operations, if necessary.” This makes little sense in view of NMFS admission in this very same passage that “many of these fish were produced specifically for harvest.” As we note below in our discussion of the Economic Impacts Analysis, hatchery production in Puget Sound and Hood Canal is nearly entirely for the subsidization (augmentation) of harvest. It is principally harvest directed at hatchery stocks of chum, coho, and non-listed chinook in Puget Sound and Hood Canal that have direct impacts on the listed chinook populations for which Limit 6 take exemptions are being sought by the Preferred Alternative that has occasioned this DEIS. Put simply, hatchery production *is* a “fishery activity.”

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Consideration of hatchery practices and their impacts on populations of the listed chinook ESU are directly relevant to the determination of the appropriate kind of harvest management plan, if any, that is compatible with the preservation and recovery of the ESU. Several scientific reviews and independent review panels have made this point and have urged NMFS to consider

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integrated recovery measures that consider both hatchery and harvest practices in conjunction with habitat protection and restoration. In particular, the Salmon Recovery Science Review Panel – an independent review expert body organized by the US National Academy of Sciences at NMFS request to oversee the quality of the science employed by the regional Technical Recovery Teams (TRT), including the Puget Sound TRT – has explicitly recommended this to the Puget Sound TRT and NMFS, state, and tribal harvest managers (RSRP 2001).

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Further, NOAA attempts to use assertions about the effects and impacts of various Puget Sound hatchery programs to justify conclusions drawn in its Proposed Evaluation and Determination of the RMP (the Proposed Action), even though, as the DEIS correctly notes, NOAA has not completed either its NEPA or ESA evaluation of those programs. NOAA’s Sustainable Fisheries Division cannot have it both ways; it cannot assert determinations regarding hatchery impacts it considers supportive of its arguments and then reject responsibility for evaluating the ecological, social, and economic impacts of those hatchery programs. Consequently, the casual dismissal of the suggested no-hatchery augmentation alternative is unconvincing as well as arbitrary and capricious.

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I-4. Inadequate Range of Alternatives Considered in Detail: The DEIS considers four (4) alternatives in some detail (DEIS Section 2). These include the co-managers’ RMP (the Preferred Alternative), two escapement goal management alternatives, and a complete no-chinook harvest alternative. This fails to provide an appropriate contrast among the considered alternatives with regard to the maximum harvest impacts that a harvest management regime might embrace. Clearly, many of the purely harvest-oriented elements of the purpose and need as it is characterized by the DEIS (e.g., “optimization of harvest of abundant Puget Sound salmon stocks”, “equitable sharing of harvest opportunity among tribes, and among treaty and non-treaty fishers pursuant to U.S. v Washington and U.S. v. Oregon”) could be satisfied by even greater levels of harvest than would generally be provided by the RMP. It is important to consider one or more such alternatives, if for no other reason than to clearly delineate where – in the opinion of the authors of the DEIS – the line is crossed with regard to satisfying ESA concerns for listed Puget Sound chinook.

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It is at the least somewhat odd that the Preferred Alternative is the most harvest-intensive of the alternatives considered and the most risk-prone with respect to impacts on the survival and recovery of the listed ESU and its component populations. This certainly suggest that the Preferred Alternative provides no middle ground with respect to the kinds of risks and benefits that are associated with mixed stock fisheries harvest regimes affecting ESA-listed stocks.

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The DEIS frankly admits that the Preferred Alternative (take-authorization of the 2004 RMP) is not the “Environmentally Preferable Alternative.” However, NOAA justifies its choice by identifying Alternative 4 (no harvest) as the Environmentally Preferable Alternative and dismissing it as incompatible with the Purposes and Needs, and describes at some length the discretion is reserves for choosing a Preferred Alternative at odds with the most Environmentally Preferable Alternative. Leave aside for the moment that the DEIS makes no very compelling case that the Preferred Alternative meets all the standards of Purpose and Need significantly more successfully than the Environmentally Preferable Alternative. Based on the standards that would identify Alternative 4 as the Environmentally Preferable Alternative, *all* the alternatives

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analyzed in the DEIS would be environmentally preferable to the Preferred Alternative. Some discussion would seem warranted on the discretion available to NOAA in choosing a Preferred Alternative that is the *least* environmentally preferable of every alternative analyzed.

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I-5. Inadequate Consideration of the Preferred Alternative's Environmental Impacts: The analysis of the Preferred Alternative fails to adequately consider or evaluate its full environmental impacts, particularly the impacts of the RMP on Threatened Puget Sound chinook. The description of the harvest regime proposed in the RMP is often confusing and misleading. Some of these issues are addressed in the discussions of other key issues evaluated in this review. Washington Trout has already submitted substantive comments to NOAA Fisheries detailing our concerns regarding NOAA Fisheries' *Proposed Evaluation and Pending Determination on a Resource Management Plan (RMP), Pursuant to the Salmon and Steelhead 4(d) Rule (PEPD)*, the technical "Proposed Action" being evaluated in the DEIS at issue. That review, *COMMENTS ON NOAA FISHERIES; SUSTAINABLE FISHERIES DIVISION Proposed Evaluation of and Pending Determination on a Resource Management Plan (RMP), Pursuant to the Salmon and Steelhead 4(d) Rule* (May 17 2004, Washington Trout), is attached as an Appendix to these Comments and are herein incorporated by reference and should be evaluated as part of Washington Trout's submitted comments on the DEIS.

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I-6. Inadequate Description of the Alternatives: Alternative 2 is inadequately characterized in such a way as to bias its evaluation. It is inappropriate, for example, to fail to employ estimation of management imprecision in modeling projected escapements under all of the Alternatives except Alternative 4, the No Harvest alternative. While there are good theoretical reasons for adopting escapement-goal-based harvest management regimes under assumptions of perfect management in which no escapement in excess of escapement goals would occur (pure threshold harvesting) or in which only a specific proportion of the excess of potential escapement would be harvest (proportional threshold harvesting) (cf., Lande et al. 1995 and 1997), in practice such perfect implementation is not expected to occur. Consequently, harvest management regimes must be adopted after taking into account the expectation that harvest regimes in any particular year/season will not be perfectly implemented so as to achieve exactly the preseason estimate of total escapement. Consideration of such imprecision affects both the choice of nominal escapement target levels and modeled projections of the range and distribution of escapements likely to be achieved over a period during which a particular management plan is to be implemented.

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By choosing to ignore these real-world complications by making the "simplifying" assumption that harvest management perfectly achieves the escapement targets in all years when population abundance is expected to exceed the escapement target, the contrast between Alternatives 2 and 3 on the one hand and the Preferred Alternative on the other with respect to conservation of populations of the listed ESU is considerably weakened. This further biases the presentation of Alternatives in favor of the Preferred Alternative.

The discussion of Alternative 2 (Escapement goal management at the management unit level with no restriction on where fisheries may take place) is further unfairly simplified by the assumption that under the six-year period of implementation considered in the DEIS projected abundances are expected to be such as to permit principally terminal area (freshwater) fisheries

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with only limited fisheries in mixed stock marine areas. The DEIS fails to consider the development and employment of modified or alternative fishing gears – such as “tangle nets” and reduced set times or net lengths for purse seines – that may selectively harvest target species and stocks and non-lethally release non-targeted chinook stocks.

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Failure to consider selective fishing gears also biases the description of Alternative 3 (Escapement goal management at the individual population level with terminal fisheries only), since in order for fisheries to take place under this alternative in estuaries and lower mainstem rivers that have multiple local populations of listed chinook (such as the Skagit and Snohomish Rivers), selective fishing gears would have to be employed. In fact, the motivation for this alternative is the fact that this is the only approach that permits risk-averse escapement goal management to be implemented in the absence of the employment of selective fishing gears.

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The descriptions and analyses of Alternatives 2, 3, and 4 are also deficient in failing to adequately describe and evaluate alternative uses of resources that might be expected to result from the adoption of a harvest management regime that is less resource intensive than the Preferred Alternative and in failing to estimate the benefits resulting from these alternative uses. For example, monitoring and enforcement activities would be shifted and/or reduced under each of these alternatives in comparison to the Preferred Alternative. This will likely result in more efficient employment of human and financial resources and resulting cost savings will enable the co-managers to invest in alternative actions, including those that have conservation benefits for listed chinook.

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II. Incomplete and Inadequate Evaluation of Economic Impacts

Section 3.6 of the DEIS “describes current conditions and recent trends in economic activity and value associated with commercial and sport fishing for salmon and steelhead in Puget Sound” (p. 3-125). Section 4.6 describes “the effects of the Proposed Action and alternatives on salmon commercial fisheries, salmon sports fisheries, and regional economies in the Puget Sound area. Economic impact indicators include sales by commercial salmon harvesters and processors, sales by businesses to sport fishing anglers, net economic values to commercial harvesters and processors, angler days, net economic values to sport anglers, regional employment and personal income levels” (page 4-129).

The descriptions of economic impacts under each of the alternatives are confined entirely to net economic benefits, principally net incomes. However, none of the descriptions or analyses contain any presentation of the costs of producing the fish harvested or the costs associated with managing the fisheries. Most important among these costs are the costs associated with the Puget Sound (including Hood Canal) hatchery facilities that subsidize a considerable proportion of the annual harvest of chum, coho and (non-listed) chinook salmon in Puget Sound, Hood Canal, and the Strait of Juan de Fuca. It is simply improper to describe the various kinds of income reported in these sections to result from commercial and sport fisheries as *net* income without a proper accounting of *gross* economic returns and associated *costs* of producing the harvested products and of engaging in the fishing and fishing-related activities.

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Consideration of the costs of producing the fish targeted for harvest is also necessary in order for the opportunity costs associated with those investments to be calculated and compared across the

alternatives to be evaluated. The complex of hatchery programs and facilities in Puget Sound and Hood Canal is huge by any standard and extremely costly to operate. This complex represents a huge subsidy to the commercial and sport fishing communities. Any putative calculation of the net economic benefit arising from Puget Sound fishing activities is incomplete and seriously misleading if the costs of hatchery production are ignored as they are in the DEIS. This is a fundamental violation of NEPA standards and requirements.

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Consideration of the costs of producing hatchery fish for harvest is also necessary to evaluate the opportunities for alternative investment in activities that promote the conservation and productivity of naturally-produced (including ESA-listed) salmon populations in Puget Sound and Hood Canal that may be made with monies that may be made available by reductions in Puget Sound and Hood Canal hatchery programs as a result of the adoption of alternative other than the Preferred Alternative. Such opportunities are legitimate potential benefits of the alternatives in comparison to the Preferred Alternatives. By failing to consider the costs of hatchery production associated with the *status quo* and, hence, with the Preferred Alternative, the economic analyses in sections 3 and 4 fail to properly consider and evaluate the full economic benefits that may reasonably be associated with one or more of the alternatives.

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For these reasons alone, the DEIS fails to comply with NEPA requirements and should be withdrawn.

CONCLUSION

In view of considerable deficiencies and omissions this review has identified in the DEIS, Washington Trout finds the document unacceptable and out of compliance with NEPA standards. The DEIS should undergo significant revision before it can be finalized. The dismissals of several potential alternatives to the Proposed Action that were proposed in scoping appear to be arbitrary. The DEIS fails to consider and analyze the alternatives to the Preferred Alternative in sufficient detail and without bias. The analysis of the Preferred Alternative fails to adequately consider or evaluate its full environmental impacts, particularly the impacts of the RMP on Threatened Puget Sound chinook. The economic analyses and the evaluation of the affected environments in the DEIS fail to include any evaluation of the full economic, social, and environmental costs of chinook harvest under each of the Alternatives.

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The DEIS fails to make a compelling extra-biological case for accepting potentially unacceptable levels of risk in the Preferred Alternative. NOAA's various and sometimes conflicting responsibilities concerning Puget Sound chinook must be reconciled, but that reconciliation does not always or automatically require the imposition of extra or undue risk on the PS chinook ESU.

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Washington Trout respectfully recommends that NOAA Fisheries substantively revise the DEIS, requesting additional information and appropriate changes in the RMP from the co-managers before a final NEPA determination is developed.

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REFERENCES

Goodman, Daniel. 2003. "Salmon supplementation: demography, evolution, and risk assessment". Paper presented at American Fisheries Symposium on Propagated Fishes in Resource Management, Boise, Idaho, June 16, 2003.

Goodman, Daniel. 2004. "Selection equilibrium for hatchery and wild spawning fitness in integrated breeding programs". In Review.

Independent Science Advisory Board. 2003. "Review of Salmon and Steelhead Supplementation". ISAB 2003-03. June 4, 2003.

Lande, Russell, Brent-Erik Saether, and Steiner Engen. 1997. "Threshold harvesting for sustainability of fluctuating resources". Ecology 78(5) 1341-1350.

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Salmon Recovery Science Review Panel. 2002. Report of the meeting held August 27 – 29, 2001. Northwest Fisheries Science Center, National Marine Fisheries Service, Seattle, Washington. 18 pages.

ATTACHMENTS

The following documents inform and supplement this review. They should be considered integral components of this review and evaluated and recorded accordingly.

48

1. *COMMENTS ON NOAA FISHERIES; SUSTAINABLE FISHERIES DIVISION Proposed Evaluation of and Pending Determination on a Resource Management Plan (RMP), Pursuant to the Salmon and Steelhead 4(d) Rule* (May 17 2004, Washington Trout)
2. Selected References (references cited in this review and in #1, but not attached, should also be considered and recorded as integral components of this review).
 - a. *ARTIFICIAL PRODUCTION REVIEW - ECONOMICS ANALYSIS PHASE I*: IEAB Task 56, July, 2002.
 - b. *Independent Science Advisory Board (ISAB) 2003. Review of Salmon and Steelhead Supplementation*. ISAB document number 2002 – 3.
 - c. Lande, Russell, Bernt-Eric, Saether, and Steinar. Engen. 1997. *Threshold Harvesting For Sustainability of Fluctuating Resources*. Ecology 78(5): 1341-1350.
 - d. Salmon Recovery Science Review Panel. 2001. *Report of the meeting held August 27 – 29, 2001. Northwest Fisheries Science Center, National Marine Fisheries Service, Seattle, Washington*. 18 pages.

RESPONSE TO COMMENTS RECEIVED FROM WASHINGTON TROUT (WT)

In addition to the comments to which NMFS responds below, Washington Trout also included a more technical set of comments (Washington Trout Part 2. Proposed Alternative) which were identical to those submitted by Mr. Sam Wright, addressed previously in this FEIS. Therefore the reader is referred to the Response to Comments Received from Sam Wright (SW).

WT-1

NMFS agrees that Washington Trout's complaint challenging NMFS' 2001 determination under the 4(d) rule on the Puget Sound harvest Resource Management Plan (RMP) was based in part on its assertion that NMFS' determination violated NEPA (Washington Trout v. Lohn, No. C01-1863R (W.D. Wash.)). NMFS and Washington Trout settled that case by NMFS' agreement to prepare an EIS on its 2004 RMP determination. The parties subsequently agreed to give NMFS one additional year to complete this EIS.

WT-2

According to CEQ Regulations, "The EIS shall succinctly describe the environment of the areas affected or created by the alternatives under consideration" (40 CFR 1502.15). The alternatives under consideration are relevant to implementation of the 2005–2009 Resource Management Plan, not the 2001 Resource Management Plan. To provide a meaningful and accurate analysis of environmental impacts resulting from the Proposed Action, the EIS must first describe the current environmental conditions that would potentially be altered. Describing historical conditions that have since changed would not provide an appropriate baseline from which to compare anticipated future changes. While a discussion of historical, 2001 conditions may provide background information, it would do little to assist with an analysis of incremental changes expected to occur between current conditions and future conditions of the Affected Environment under the Proposed Action or any of the alternatives.

WT-3

See response to comment WT-2.

WT-4

Comment noted, but NMFS respectfully disagrees. NMFS see this as a statement of fact in that it describes what the measures are intended to do as defined by the Resource Management Plan. It is not meant to infer that this will be accomplished, since that is the subject of NMFS' evaluation of the Proposed Action (the Resource Management Plan), or to infer that the implementation, monitoring and

1 evaluation procedures of the other alternatives are not designed to ensure fisheries managed under
2 those alternatives would be consistent with the same objectives for conservation and use.

3 **WT-5**

4 These constraints are not meant to be quantitative and comparable objectives for implementing the
5 Purpose and Need. Rather, they provide parameters from which the implementation of the Proposed
6 Action must occur. NMFS believes that “risks” can be managed in a manner that “optimizes”
7 abundance, protects weaker stocks and provides “equitable” harvest sharing because there are various
8 ways to manage a fishery to ensure these outcomes.

9 **WT-6**

10 CEQ Regulations do not require that the components of the Purpose and Need be prioritized. The list
11 provides constraints and not objectives that must be met. CEQ Regulations require only that “the [EIS]
12 shall briefly specify the underlying purpose and need to which the agency is responding...”(40 CFR
13 1502.13).

14 **WT-7**

15 It is unclear from this comment in which section of the DEIS the commentor finds this argument. The
16 DEIS does not argue that only the Preferred Alternative meets the Purpose and Need for the Proposed
17 Action. With one exception, any of the alternatives would meet the Purpose and Need, which is the
18 basis for determining which alternatives to analyze in an EIS. The DEIS discloses that Alternative 4
19 would not meet the Purpose and Need and the reasons why it would not. However, inclusion of
20 Alternative 4 in the analysis was required as part of a settlement agreement with the commentor
21 (Washington Trout) as described in DEIS Subsection 2.3, *Alternatives considered in Detail*.

22 **WT-8**

23 See response to comment EPA-1.

24 **WT-9**

25 NMFS considered the tribal-only fisheries alternative but eliminated it from detailed study for the
26 reasons described in DEIS Subsection 2.2.1, *Tribal-Only Fisheries*.

27 **WT-10**

28 NMFS does place high importance on its trust responsibilities to the tribes. NMFS does not agree, as
29 the commentor seems to imply, that the fishing impacts expected under the Preferred Alternative are
30 above those that would be consistent with its trust responsibility. DEIS Subsection 4.4, *Tribal Treaty*

1 *Rights and Trust Responsibility*, discusses each alternative relative to tribal treaty rights and NMFS’
2 trust responsibility. The DEIS concluded that “the Proposed Action [Preferred Alternative] was
3 predicted to be consistent with the federal trust responsibility to protect and provide tribal fishing
4 opportunities.” NEPA requires identification of reasonable alternatives that are consistent with the
5 purposes and needs of the Proposed Action. In this case, those include the protection of tribal treaty
6 rights and NMFS’ trust responsibilities, and meeting ESA criteria as defined by Limit 6 of the 4(d)
7 Rule. NEPA does not require evaluation of alternatives for the sole purpose of defining what fishing
8 level is required to satisfy NMFS’ trust responsibilities, or to evaluate the value of one element of the
9 Purpose and Need against another. See also response to comment WT-21.

10 **WT-11**

11 Comment noted, but NMFS respectfully disagrees and finds the original reasons for eliminating the
12 alternative from detailed study are still relevant (see Subsection 2.2.1 of the DEIS). See also response
13 to WT-10.

14 **WT-12**

15 WDFW would not be prevented from collaborating with the tribes in the development of a tribal-only
16 fishery proposal to provide to NMFS for consideration under the 4(d) Rule (personal communication
17 with Teresa Scott, WDFW, Natural Resources Policy Analyst, September 2, 2004). However,
18 providing a tribal-only proposal under Limit 6 would not be consistent with elements of the stated
19 Purpose and Need for the Proposed Action: 1) provides for tribal and non-tribal fishing opportunity co-
20 managed under the jurisdiction of U.S. v. Washington, and 2) provide equitable sharing of harvest
21 opportunity among tribes, and among treaty and non-treaty fishers pursuant to U.S. v. Washington and
22 U.S. v. Oregon. In other words, it would not be consistent with the Purpose and Need for the
23 Washington Department of Fish and Wildlife and the Puget Sound tribes to put forward a joint plan
24 under Limit 6 that would include no provision for non-tribal fishing. A fishery plan involving tribal-
25 only fisheries would reasonably be expected to be provided to NMFS for evaluation under the Tribal
26 4(d) Rule.

27 Also response to comment WT-16.

28 **WT-13**

29 See response to comment WT-12.

30 **WT-14**

31 See response to comment WT-12.

WT-15

Under NEPA, the alternatives are chosen based on the Purpose and Needs of the Proposed Action as described in DEIS Subsection 1.3. NMFS' primary mandates are to 1) carry out its trust responsibilities; 2) apply the Endangered Species Act; and, 3) provide for sustainable fisheries and comply with the various federal laws and executive orders described in DEIS Appendix F. These mandates are not mutually exclusive. NMFS sees no conflict between its primary mandates and the Purpose and Needs for the Proposed Action, or with the range of alternatives in the DEIS (with the exception of Alternative 4; see discussion in DEIS Subsection 2.3, *Alternatives considered in Detail*).

WT-16

As described originally by the commentor during public scoping for the EIS in August 2003, the tribal-only alternative would provide the 4(d) Rule take limitation on harvest activities only for treaty tribal fishing, would estimate the level of tribal fisheries required to satisfy federal trust responsibilities to the Puget Sound treaty tribes, and would configure those fisheries for all salmon species. Non-tribal fisheries were not included in the description of the alternative (Washington Trout 2003). NMFS is confused by this comment because it is inconsistent with the description of the alternative provided by the commentor in August 2003, and with comments previously submitted by the commentor (see responses to comments WT-10, WT-11, and WT-15). Also see responses to comments SW-31 and WT-19.

The range of alternatives considered by NMFS emphasized types of management frameworks that would best achieve the conservation objectives and maximize use of the resource. Salmon abundance is highly variable from year to year, both among chinook salmon populations and other salmon species, requiring managers to formulate fisheries to respond to the population abundance conditions particular to that year. Therefore, the alternatives provide several harvest management frameworks within which the co-managers would develop their annual action-specific fishing regimes to protect Puget Sound chinook salmon and meet other management objectives. Except as needed to comply with the settlement agreement reached in Washington Trout v. Lohn, the alternatives considered did not include such specific details of an annual fishing regime as where and when fisheries occur; what gear will be used; or how harvest will be allocated among gears, areas or fishermen.

The commentor has now suggested a new alternative that would combine a tribal-only pre-terminal fishery with tribal/recreational non-tribal terminal fishery alternative. Unfortunately, not enough details are provided by the commentor to evaluate this alternative. Modelers need a description of key management criteria before they can shape the model runs and analyze an alternative; e.g., the type of

1 management objectives, the resolution of management (population or management unit), the fishing
2 response to low abundance. The commentor's proposal is simply a tribal and non-tribal fishing plan,
3 and does not describe any conditions or limitations to fisheries or fishing impacts when low
4 abundances would warrant additional protective measures. If the key management criteria/values from
5 the Proposed Action (Alternative 1) or the fixed escapement goal approach (Alternative 2 or 3) were
6 applied to this proposed tribal and non-tribal fishing plan, the end result on chinook salmon population
7 status would be very similar to the outcomes in the original alternatives evaluated in the DEIS. For
8 example, if it were based on fixed-goal management, the results would be very similar to Alternative 2
9 or 3 because, as in those alternatives, the abundance for several management units would be
10 insufficient to allow fishing in pre-terminal areas. Such management guidance was not provided by the
11 commentor for this proposed alternative.

12 Without elaboration on key management criteria pertaining to chinook salmon population status, the
13 new proposal is, in essence, a redistribution of harvest between tribal and non-tribal users rather than a
14 new type of conservation measure or management framework for Puget Sound chinook salmon. This
15 stands in contrast to the alternatives that were included in the DEIS, where the guidance provided by
16 the settlement agreement pursuant to Washington Trout v. Lohn made clear the difference in
17 conservation approach to be applied for each alternative.

18 **WT-17**

19 The requirement for reasonable regulation of non-tribal activities as it relates to the discussion of
20 Alternative 4 and the provisions of the Secretarial Order does not make consideration of the further
21 restriction of non-tribal fisheries or even tribal-only fisheries a reasonable alternative to the Proposed
22 Action considered in the DEIS. Alternative 4 would close all salmon and steelhead net fisheries that
23 would take listed chinook salmon. The Secretarial Order provides that before further restricting tribal
24 fisheries, as would occur under Alternative 4, NMFS must explore whether the necessary reductions
25 could be achieved through reasonable restriction of non-tribal fishing activities. Such additional
26 restriction of the non-tribal fishery would occur if NMFS concludes that the action as proposed would
27 cause jeopardy to listed species; i.e., the conservation purpose of the restriction cannot be achieved by
28 reasonable regulation of non-tribal activities and the restriction is reasonable and necessary for
29 conservation of the species at issue. As discussed in DEIS Section 5, *Identification of the*
30 *Environmentally Preferable and Agency Preferred Alternatives*, NMFS' evaluation of the Proposed
31 Action (Alternative 1) concluded that it would not jeopardize listed Puget Sound chinook salmon
32 (NMFS 2004). Therefore, further restrictions of either the tribal or non-tribal fisheries would not be

1 necessary for the Puget Sound Chinook ESU. The original reasons cited in the DEIS (Subsection 2.2.1)
2 for elimination of this alternative still apply. Also see responses to comments WT-10 and WT-15.

3 **WT-18**

4 NMFS cannot say what alternative Resource Management Plans the co-managers may or may not be
5 inclined to consider. NMFS does not view a tribal-only alternative (as originally described; see DEIS
6 Subsection 2.2.1) as a reasonable alternative. A tribal-only fishery alternative is not consistent with two
7 elements of the Purpose and Need: 1) provides for tribal and non-tribal fishing opportunity co-managed
8 under the jurisdiction of U.S. v. Washington; and 2) provide equitable sharing of harvest opportunity
9 among tribes, and among treaty and non-treaty fishers pursuant to U.S. v. Washington and U.S. v.
10 Oregon. NMFS considers a tribal-only alternative to be unreasonable because the State of Washington
11 would not agree to it, as a co-manager of the Puget Sound fisheries under U.S. v. Washington and the
12 Puget Sound Salmon Management Plan, nor would it have any obligation or incentive to agree to
13 tribal-only harvest, under the treaty rights allocation principles of U.S. v. Washington. That is why
14 these provisions were explicitly included as elements of the Purpose and Need. Tribal-only fishing
15 plans would more likely be submitted under the Tribal 4(d) Rule.

16 The inclination on the part of the applicants to consider an alternative different from what they have
17 proposed is not what makes an alternative unreasonable under NEPA. It is whether it meets the Purpose
18 and Need of the Proposed Action, and whether it is feasible to implement, that determines whether it is
19 a reasonable alternative to evaluate in the DEIS.

20 **WT-19**

21 In responding to comments or analyzing additional alternatives, NMFS must use the guidance provided
22 to it and cannot assume a commentor meant something else. The request provided by Washington
23 Trout to NMFS through public scoping was “Since the desire for harvest is the justification for
24 hatchery operations, the impacts of hatchery operations should be evaluated in this EIS through the
25 analysis of an alternative harvest regime that does not include hatchery augmentation”(Washington
26 Trout 2002). The fact that, in practical terms, there would not be an instantaneous elimination of all
27 hatchery fish from Puget Sound (the Pacific Coast is irrelevant since the proposed action affects only
28 Puget Sound fisheries) was taken into account in NMFS’ original reasons for eliminating this
29 suggestion from detailed analysis (see DEIS Subsection 2.2.2, *No Hatchery Augmentation*). There
30 would not be a significant difference between a no-hatchery alternative and the Proposed Action for the
31 duration of the Proposed Action (2005–2009).

WT-20

Section 2 of the DEIS clearly states that the alternatives must fit the Purpose and Need for the Proposed Action. Section 1.3 describes each element of the Purpose and Need for the Proposed Action. These statements and descriptions are meant to provide the public and other federal agencies with the information needed to shape and suggest additional alternatives.

WT-21

While the analysis suggested in this comment may be informative for other purposes, it is not consistent with NEPA as applied to the assessment of the Proposed Action. NMFS agrees with the commentor that the EIS should “further the aims and purposes of NEPA that a consideration of environmental impacts provide a reasonable spectrum of alternative ways that *might* succeed in meeting the broad purposes of a proposed action while minimizing or eliminating undesirable collateral impacts... in order to provide a useful evaluation of the relative environmental impact from meeting the need, and determine....the best balance between environmental conservation and meeting the need....” The Purpose and Need is defined by the agency and applicants preparing to make the decision; in this case, NMFS and the co-managers. Section 2 of the DEIS describes the range of alternatives that would meet the purpose and need; Section 4 of the DEIS discusses the environmental impacts of each alternative; and Section 5 of the DEIS and the Record of Decision describe the basis of NMFS’ decision in terms of the balance between environmental conservation and resource use. It is unclear what is meant by “the relative value of meeting the need as now conceived,” as the purpose of the EIS is to make a decision that balances environmental conservation with other elements of the Purpose and Need (taking into account cultural and economic resources as well as biological).

Alternatives that meet only a part of the full Purpose and Need are not reasonable in that they do not provide decision makers with the full range of information and a full and fair disclosure of the impacts of a range of reasonable alternatives designed to accomplish the agency’s goal, i.e.; to meet the Purpose and Need for the Proposed Action (CEQ Regulations §1508.23). Evaluation of such alternatives would result in the needless generation of paperwork and accumulation of extraneous background data, and would not emphasize those alternatives that would achieve the goal (CEQ Regulations §1500.1[c] and §1500.2[b]). However, NEPA does require that the EIS discuss the reasons why some alternatives were eliminated from detailed analysis (CEQ Regulations §1502.14). The no-hatchery alternative was considered but eliminated from further analysis for a variety of reasons. The reasons for the elimination of this alternative are described in DEIS Subsection 2.2.2. (Also see responses to comments NFS-9, WT-24 through 27.)

WT-22

Although most Puget Sound hatchery chinook salmon are currently mass-marked, some Puget Sound facilities will not have all ages of mass-marked chinook returning until 2008 at the earliest. The Proposed Action covers the transitional period that ends with 100 percent mass-marking of hatchery fish. NMFS agrees that the majority of returning Puget Sound and Hood Canal hatchery chinook will be mass-marked by 2004 so that they could be distinguished in future years. However, that information is not available for a sufficient number of Puget Sound chinook salmon populations to use to model and evaluate the Proposed Action or its alternatives at this time. That information is important to determine how many of the hatchery adults would have survived in order to remove them from the returning adult aggregate in order to model a no-hatchery alternative.

WT-23

The genetic impacts of varying levels of naturally-spawning hatchery chinook salmon on natural populations will be evaluated through NMFS on-going Puget Sound hatchery program EIS process. Effects of incorporation of natural-origin spawners into hatchery broodstocks on the genetic characteristics of hatchery populations, and on the abundance of donor natural populations, will also be evaluated in the hatchery EIS. These evaluations will account for expected variations in hatchery and natural-origin chinook salmon proportions, driven by natural environmental conditions, hatchery production levels proposed under the alternatives evaluated in the EIS, and by harvest rates levied by fisheries with which the hatchery programs are integrated.

WT-24

NMFS agrees that fishery activities might affect the number and age composition of spawning Puget Sound chinook salmon and the composition of the spawning population. These effects are discussed in DEIS Subsections 4.3.1, 4.3.2, 4.3.5 and 4.3.7. It is not necessary to analyze a no-hatchery augmentation alternative to assess these fishery-related effects of the Proposed Action and its alternatives. NMFS is currently evaluating the effects of Puget Sound hatchery programs through a separate EIS. That EIS will also consider effects on harvest from the implementation of various Puget Sound hatchery production alternatives. See response to WT-23.

WT-25

Section 1502.16 of CEQ Regulations states that “The discussion [of environmental consequences] will include the environmental impacts *of the alternatives including the proposed action* [emphasis added], any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man’s environment and the maintenance and enhancement of

1 long-term productivity, and any irreversible or irretrievable commitments of resources which would be
2 involved in the proposal should it be implemented.” In its request for a no-hatchery alternative during
3 public scoping, Washington Trout stated “Hatchery operations hurt listed fish by taking them for
4 broodstock, releasing hatchery fish that compete with and prey upon listed fish, causing loss of genetic
5 fitness as a result of interbreeding, and physically blocking migration at certain hatchery locations.
6 Furthermore...justified levels of harvest...”(Washington Trout 2002). It is outside the scope of the
7 Proposed Action to evaluate the broader effects of hatcheries; and most of the reasons suggested for
8 including this alternative (broodstock takes, prey competition, loss of genetic fitness, and migration
9 barriers) are not affected by fishery activities. Consequently, the DEIS discusses the effects of hatchery
10 programs that would be expected to occur as a result of the Proposed Action and its alternatives, such
11 as straying (DEIS Subsection 4.3.7), and possible overfishing (DEIS Subsections 4.3.1, 4.3.2, 4.3.5 and
12 4.3.7). However, as the commentor is aware, NMFS is evaluating the effects of Puget Sound hatchery
13 programs under a separate EIS. That EIS will also consider effects on harvest from the implementation
14 of various Puget Sound hatchery production alternatives. See response to comment WT-23.

15 Finally, even if the hatchery programs were discontinued in 2005, substantial numbers of hatchery fish
16 from previous hatchery releases will return to Puget Sound in 2005 and over the next several years.
17 Given that these fish will return independently of the conduct of future hatchery programs, it is not
18 reasonable to expect that the co-managers would develop a Resource Management Plan that did not
19 provide for harvest of these hatchery fish in the interim, particularly since many of these fish were
20 produced specifically for harvest.

21 **WT-26**

22 The commentor is correct that the Recovery Science Review Panel has emphasized integrated recovery
23 measures in the context of developing recovery plans. Consistent with these recommendations, NMFS
24 is currently involved as part of a Puget Sound-wide effort to develop a recovery plan for listed Puget
25 Sound chinook salmon that will integrate hatchery, harvest and habitat recovery actions. However, that
26 effort is outside the scope of the Proposed Action, which is the implementation of a fishery
27 management plan for salmon fisheries in Puget Sound over the next five years. The DEIS
28 acknowledges this planning activity and the implications to future harvest activities in DEIS Subsection
29 4.3.1, *Threatened and Endangered Fish Species*.

30 The conservation standards used to assess the four alternatives in the DEIS also take into account the
31 effects of hatchery programs and habitat conditions as described in DEIS Appendix C2. Where
32 sufficient information is available, NMFS has developed population-specific conservation standards

1 that include consideration of freshwater and marine environmental conditions and focus on the effect of
2 harvest on naturally-produced salmon.

3 Also see responses to comments WT-23 through WT-25.

4 **WT-27**

5 See response to comment WT-22 through WT-26, and DEIS Subsection 2.2.2, *No Hatchery*
6 *Augmentation*.

7 **WT-28**

8 NMFS analyzed the alternatives identified during scoping that were reasonable, technically feasible,
9 and consistent with the Purpose and Need of the Proposed Action. NEPA does not require that the
10 Proposed Action fall within the middle ground of all alternatives analyzed, and does not support the
11 concept of analyzing alternatives that would result in greater environmental impacts than would occur
12 under the Proposed Action (such as increased harvest beyond the proposed levels). CEQ regulations
13 require that the action agency identify a reasonable range of alternatives (CEQ Regulations §1502.14),
14 and that the agency thoroughly assess the impacts of the Proposed Action and identified alternatives on
15 the natural, human, and built environment (CEQ Regulations §1502.16). Recall that the federal action
16 under consideration through NEPA is the 4(d) determination on the Puget Sound Chinook Resource
17 Management Plan (RMP). NMFS must evaluate the harvest management plan that is provided to it by
18 the co-managers. If NMFS finds that the Proposed Action meets the criteria of Limit 6 of the 4(d) Rule
19 and will not appreciably reduce the likelihood of survival and recovery of the affected ESU, then it
20 must issue that finding. NMFS' evaluation of the RMP concludes that it would not appreciably reduce
21 the likelihood of survival and recovery of the Puget Sound Chinook ESU. The CEQ regulations do not
22 require that the lead agency impose an activity or alternative that is more impactful in scope than that
23 being proposed by the applicant. Given the complexity of the Puget Sound Chinook ESU, there are
24 multiple scenarios that would meet ESA requirements for the ESU; however, satisfying ESA concerns
25 is only one element of the Purpose and Need of the Proposed Action. (Also see responses to comments
26 WT-5, WT-6 and WT-21.)

27 Further, NMFS is confused by the commentor's suggestion for a more liberal fishing alternative than
28 the Proposed Action, since this suggestion is contrary to the commentor's own subsequent comments
29 suggesting that the Proposed Action would result in "potentially unacceptable levels of risk." (See
30 comments WT-29, WT-30, WT-45 through WT-46.)

WT-29

See response to WT-28.

WT-30

NMFS agrees that based on its choice of criterion to choose the Environmentally Preferable Alternative, Alternatives 2, 3, or 4 would result in less biological impacts to some resources than Alternative 1, the Preferred Alternative. Section 1505.2(b) of CEQ Regulations requires that the Record of Decision identify which alternative or alternatives are considered to be environmentally preferable based on which would best express the national environmental policy as expressed in Section 101 of NEPA. CEQ's 40 Most Asked Questions states that "Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves and enhances historic, cultural, and natural resources" (CEQ 40 Most Asked Questions 6a). Based on CEQ Regulations, NMFS was conservative in its choice of the Environmentally Preferable Alternative by basing it only on the effects of the biological and physical environment. More broadly inclusive criteria would have made Alternative 1 the Environmentally Preferable Alternative, since Alternatives 2, 3 or 4 clearly would not "protect, preserve or enhance" the cultural and historic resources represented by the exercise of tribal treaty fishing rights. Under the broader, more inclusive interpretation of CEQ Regulations, Alternative 1 would be both the Environmentally Preferable and Agency Preferred Alternative.

CEQ's Forty Most Asked Questions 6a goes on to acknowledge that "The Council recognizes that the identification of the environmentally preferable alternative may involve difficult judgments, particularly when one environmental value must be balanced against another. However, NEPA does not require that an agency adopt the most environmentally preferable alternative but that the impacts are disclosed in a full and fair manner" (CEQ Regulations §1502.9 and 15002.16), and that the agency provides a clear record of the basis of its decision, "including consideration of economic and technical considerations and agency statutory missions"(CEQ Regulations §1505.2[b]). NMFS believes it has fully disclosed the expected impacts resulting from an alternative that is not the environmentally preferred, as required by CEQ Regulations.

WT-31

These comments have been addressed as part of NMFS' 4(d) evaluation process of the Puget Sound Chinook Harvest Resource Management Plan provided to it by the co-managers (the Proposed Action), and are attached as Appendix A to the Record of Decision.

WT-32

Management error is not incorporated in modeling any of the alternatives in the DEIS, including the Proposed Action. In this way, the alternatives are treated exactly the same. Instead, management error is incorporated into the development of harvest management objectives and the evaluation of the various management strategies represented by the different alternatives. Robustness of the different alternatives to management error is briefly described in DEIS Subsection 4.3.8.1, Indirect Effects. However, NMFS has expanded the discussion in Subsection 4.3.8.1 in FEIS Volume 2 to provide more detail on this subject.

WT-33

Since all marine area fisheries in Puget Sound are mixed-stock fisheries to a varying degree, including terminal fisheries where non-local stocks from a variety of areas are commonly found, fishing opportunities under Alternative 2 or 3 would likely be limited to the freshwater areas where only the local stock is present, given the abundances anticipated during the five years of the Proposed Action (2005–2009). The escapement goal-based alternatives were described as management for the weakest population with “no fishing” as the fishing level at low abundance. Describing special cases/conditions under “escapement goal management” where some fishing in Puget Sound would be intentionally allowed on stocks without harvestable surplus could result in a multitude of alternative variations that would need to be analyzed, for which the commentor provides no guidance. The simple terms that might be used to describe special cases like “incidental only” or “limited impact” are judgment calls that are open to interpretation. (Also see response to comments SW-1B and 1E and NFS-5, and DEIS Subsection 4.2 that provides rationale behind choice of abundance during the implementation period of the Proposed Action.)

WT-34

Alternative fishing gears such as “tangle nets” are not specifically addressed in the Proposed Action being evaluated by NMFS for ESA approval. Many gear-related measures have been and would be implemented under the Proposed Action that reduce mortality on released animals (including chinook salmon), or reduce such encounters (as with seabirds). Limitations on set time or net length can reduce fishing effort (and therefore, overall catch), but do not contribute to increased selectivity of that gear (i.e., do not increase the selectivity of the catch).

Purse seines, reef nets, beach seines and angling gear are highly selective gears from which non-targeted fish or species can be released with low incidental mortality. There are a number of selectivity measures being implemented for the current gears employed by the co-managers; for example:

- a) Recovery boxes: Commercial purse seines, gillnets and reef nets use recovery boxes when release of certain fish is required; i.e., non-tribal purse seine and gillnet fisheries in Marine Catch Areas 7 and 7A during the time chinook and coho salmon are present. Recovery boxes allow fish to recover from handling prior to being released. Studies show released fish survive better when recovery boxes are used.
- b) Reef net selective release: Reef net gear maintains a targeted fishery on abundant sockeye and coho salmon in Area 7, because survival from that gear of fish required to be released is very high.
- c) Cut meshes: Gillnetters are required to cut net meshes in order to release non-target species. Fish released from a gill net under typical methods do not exhibit high survival. Cutting meshes to release the fish significantly reduces trauma to the animal, and improving survival.
- d) Special Recreational Handling Rule: In Marine Catch Areas 1 through 6 and 13, and in two Puget Sound freshwater fisheries: it is illegal to bring a wild salmon, or a species of salmon, aboard a vessel (or otherwise “land”) if it is unlawful to retain those salmon. This provision reduces trauma to released fish, thus increasing post-release survival. Depending on the success of these fisheries, they might be expanded in the future.

All implementation of selective fishing gear has some associated mortality associated with it, even if it is very low (Columbia River Compact 2004; Ruggerone and June 1996; Vander Haegen 2002a; Vander Haegen 2002b; Vander Haegen 2001; Vander Haegen 2003; also see Appendix B of the Proposed Action in DEIS Appendix A). Because of the associated non-retention mortality, fisheries could not occur, even with the use of selective gear, under Alternative 2 or 3 when abundance is below the spawning escapement objective for either management units (Alternative 2) or populations (Alternative 3).

WT-35

See response to comment WT-34. Given that non-retention mortality occurs with the use of any selective gear, it is unclear what the commentor means by “...the motivation for this alternative is the fact that this is the only approach that permits risk-averse escapement goal management to be implemented in the absence of the employment of selective fishing gears.”

The conservation objectives of the Proposed Action do not distinguish between fish caught in saltwater or freshwater, by nets or by sport gear, for personal consumption or for commercial sale, as a result of landing or release. An adult fish killed after being released in the Strait of Juan de Fuca sport fishery is no different from an adult fish killed in a Skagit River sport or net fishery. There is no biological reason to distinguish among these impacts. The question of where the impacts take place, and by what gear, is more often a question of allocation and increased opportunity than conservation. It is the harvest management objectives that limit the impacts to the populations.

WT-36

There are so many demands for the limited funds and staff available for natural resource management that the state and tribes would have no trouble finding alternative uses for those funds and staff. For example, a vast majority of tribal resources are already devoted to non-salmonid fisheries, research, and recovery planning. It is likely that tribal shell fisheries management alone could use any surplus resources, even if salmon fisheries were generally closed. The DEIS states that enforcement activity may be reduced, but it would not be eliminated altogether since some enforcement is required to monitor compliance with fishery closures. Any displaced salmon fishery enforcement would likely be redirected to enforcement of other fish and wildlife rules.

NMFS agrees that state and tribal resources usually spent on fishery monitoring would likely be shifted to resource monitoring (see DEIS Subsection 2.3.2 through 2.3.4). In any case, the costs would be expected to be the same (personal communication with Teresa Scott, WDFW, Natural Resources Policy Analyst, July 27, 2004, and Will Beattie, NWIFC, Conservation Management Coordinator, July 27, 2004). NMFS is not clear what alternative actions are being suggested that have conservation benefits for listed chinook salmon. On the other hand, there can be no doubt that additional resource monitoring funds would benefit chinook salmon, and other listed fish and wildlife throughout Washington (Washington Monitoring Oversight Committee 2002).

WT-37

Although the economic analysis evaluates net economic benefits, the descriptions of economic effects are not confined to net benefits. Measures of gross economic returns evaluated in the Puget Sound Chinook Harvest DEIS include sales of commercially-harvested salmon, trip-related sales to anglers, and effects on personal income and employment associated with these sales.

Costs associated with hatchery facilities are not reported because none of the alternatives is expected to substantially affect hatchery production and operations, particularly over the five-year period when the Proposed Action will be in effect (2005–2009). The effect of potential changes in hatchery operations in the Puget Sound area is the subject of an EIS currently being prepared by NMFS, in conjunction with the Washington Department of Fish and Wildlife and the Puget Sound treaty tribes. Changes in hatchery operations may occur in the future in response to the outcome of the hatchery EIS, other state or tribal objectives or newly available information, but the effect of implementing any of the alternatives for the Puget Sound Chinook Harvest Resource Management Plan EIS on changes in hatchery operations is considered speculative and unlikely to occur within the time frame of the Proposed Action.

1 NMFS acknowledges that the costs associated with managing the fisheries affected by the Proposed
2 Action could be impacted by the alternative implemented. These costs, which are borne primarily by
3 the State of Washington and the Puget Sound Tribes, include expenditures for pre-season planning, in-
4 season management, sampling, monitoring, evaluation and enforcement. For the Washington
5 Department of Fish and Wildlife (WDFW), costs for salmon management in marine waters are
6 estimated to be about \$300,000 per year, and costs for salmon fishery sampling in marine waters are
7 estimated to be about \$562,000 per year. Information is currently unavailable on management or
8 enforcement costs incurred by the Puget Sound Tribes, or for enforcement by WDFW.

9 If salmon fisheries in Puget Sound closed or were dramatically reduced, as envisioned under the No-
10 Fishing Alternative (Alternative 4), it can reasonably be assumed that resources used by the State and
11 tribes to manage or enforce those fisheries would be re-directed toward management and enforcement
12 of other fisheries in the Puget Sound area, including shellfish or groundfish fisheries, or toward salmon
13 research, habitat assessment, or restoration and recovery of salmon populations. The State (WDFW)
14 and Puget Sound tribes presently have insufficient funding to adequately address the pressing issues
15 related to species other than salmon, some of which are on the Endangered Species List, and others
16 subject to concern over harvest allocation distribution and harvest accounting. Consequently, funds that
17 might be available from a closure or curtailment of salmon fisheries in Puget Sound would likely be
18 redirected to address critical high-profile species under ESA and State/Tribal allocation issues (e.g.,
19 bull trout, Puget Sound crab, Puget Sound steelhead and groundfish).

20 A similar situation would likely occur if Alternative 2 or 3 were implemented, in which fishing would
21 be concentrated in terminal areas. More management resources would be devoted to improving the
22 performance of freshwater fisheries. It can reasonably be expected that a large proportion, if not all, of
23 current management resources would be redirected to refine terminal management tools, and monitor
24 those fisheries.

25 In conclusion, because current funds for management and enforcement of fisheries affected by the
26 Proposed Action would likely be re-directed to other fisheries in the Puget Sound area if Alternative 2,
27 3, or 4 were implemented, the overall effect of fishery management and enforcement efforts on
28 generating jobs and personal income in the Puget Sound region would be minor. Some distributional
29 effects may occur as spending by the management agencies shifted between sub-regions, but these
30 effects would likely be minor given current funding levels.

WT-38

Because none of the alternatives is expected to result in any changes to hatchery operations over the five-year period covered by the Plan (2005–2009), and potential long-term effects of the alternatives on hatchery operations are considered speculative, analysis of current investments and associated economic impacts related to hatchery operations is not warranted in this EIS. The economic effects of hatchery operations in the Puget Sound area are being evaluated as part of an EIS currently being prepared by NMFS, in conjunction with the Washington Department of Fish and Game and the Puget Sound treaty tribes.

WT-39

See response to WT-38.

WT-40

Comment noted, but NMFS respectfully disagrees.

WT-41

See responses to comments WT-9 through WT-17, WT-19 through WT-21, WT-23 through WT-28 as well as responses to comments SW-1A through SW 1I, SW-16, SW-19, NFS-3 through NFS-6, NFS-10, and DEIS Subsection 2.2, *Alternatives Considered but Eliminated from Detailed Study*. NMFS determined that the comments could be addressed through its responses, revision to the DEIS, and description of mitigation measures. CEQ Regulations (40 CFR §1503.4) require that the agency preparing the Final Environmental Impact Statement respond to public comments by modifying or considering additional alternatives, modifying its analysis, making factual corrections, or explaining why no response is warranted. It does not require modification of the Proposed Action, although the applicants may choose to do so based upon consideration of public comment.

WT-42

Comment noted, but NMFS respectfully disagrees based on its responses to comments above.

WT-43

NMFS determined that the comments could be addressed through its responses, revision to the DEIS, and description of mitigation measures. CEQ Regulations (40 CFR §1503.4) require that the agency preparing the Final Environmental Impact Statement respond to public comments by modifying or considering additional alternatives, modifying its analysis, making factual corrections or explaining why no response is warranted. It does not require modification of the Proposed Action, although the applicants may choose to do so based on consideration of public comment. Public comment on the

1 RMP (Proposed Action) occurred as part of NMFS' consideration of the action through the ESA 4(d)
2 process.

3 **WT-44**

4 Comment noted, but NMFS respectfully disagrees based on its responses to comments above.

5 **WT-45**

6 Comment noted, but NMFS respectfully disagrees. Section 4 of the DEIS (and as revised in FEIS
7 Volume 2) includes a thorough evaluation of each of the resources in the natural, built and human
8 environment that may be affected by the Proposed Action. Where available, NMFS has relied on
9 resource standards developed by experts in the resource fields considered in the DEIS, including
10 agency standards in its evaluation of the alternatives. Several examples are: 1) Subsections 4.8.1 and
11 4.8.4 – using NMFS' Potential Biological Removal thresholds for evaluation of impacts to marine
12 mammals and ESA determinations on seabirds by the USFWS for its evaluation of effects on marbled
13 murrelets, respectively; 2) Section 4.7 – using standards established by the U.S. Environmental
14 Protection Agency to assess impacts of the alternatives on Environmental Justice; and 3) the Proposed
15 Action – including the subject of a detailed Section 7 consultation and evaluation under Limit 6 of the
16 ESA 4(d) Rule. Section 5 of the DEIS identifies the Environmentally Preferred and the Agency
17 Preferred Alternative, and a detailed discussion of why NMFS has chosen its preferred alternative.

18 **WT-46**

19 Section 5 of the DEIS (Volume 2 of the FEIS) describes how NMFS has balanced its various mandates
20 in its choice of the Agency Preferred Alternative. NEPA also requires NMFS to identify and discuss in
21 its Record of Decision all the relevant factors which were balanced by the agency in making its
22 decision including economic and technical considerations, agency statutory missions and national
23 policy (40 CFR §1505.2). The Record of Decision is issued a minimum of 30 days after the EPA has
24 notified the public of the availability of the FEIS (40 CFR §1506.10).

25 **WT-47**

26 The DEIS has been revised as indicated in responses to comments SW-15, SW-28, WT-32, EPA-1,
27 EPA-6, EPA-10, and EPA-16 (see FEIS Volume 2). NMFS determined that the comments could be
28 addressed through its responses, revision to the DEIS, and description of mitigation measures. CEQ
29 Regulations (40 CFR §1503.4) require that the agency preparing the Final Environmental Impact
30 Statement respond to public comments by modifying or considering additional alternatives, modifying
31 its analysis, making factual corrections, or explaining why no response is warranted. It does not require

1 modification of the Proposed Action, although the applicants may choose to do so based on
2 consideration of public comment. Public comment on the Proposed Action occurred as part of NMFS
3 consideration of the action through the ESA 4(d) process.

4 **WT-48**

5 Comment noted. NMFS acknowledges that these resources were used as integral components of the
6 Washington Trout review, and this response serves as a record of that acknowledgement.

References

- Beattie, Will. Conservation Management Coordinator, Northwest Indian Fisheries Commission, Olympia, Washington. July 27, 2004. Personal communication with Susan Bishop, NMFS, re: cost redistribution of personnel and sampling resources among EIS alternatives.
- Columbia River Compact. 2004. Joint staff report winter fact sheet No. 3. February 5, 2004.
- Ruggerone, Gregory T. and Jeffrey June. 1996. Pilot study: survival of chinook salmon captured and released by a purse seine vessel in Southeast Alaska. Prepared for: Southeast Alaska Seiners Association, Purse Seine Vessel Owners Association. July 12, 1996. 11 pages.
- Scott, Teresa. Natural Resources Policy Analyst, Washington Department of Fish and Wildlife, Olympia, Washington. July 27, 2004. Personal communication with Susan Bishop, NMFS, re: cost redistribution of personnel and sampling resources among EIS alternatives.
- Scott, Teresa. Natural Resources Policy Analyst, Washington Department of Fish and Wildlife, Olympia, Washington. September 2, 2004. Personal communication with Susan Bishop, NMFS, re: appropriateness of evaluating a tribal only alternative in the Puget Sound chinook harvest EIS.
- U.S. v. Oregon Technical Advisory Committee. 2004. Biological assessment of incidental impacts on salmon species listed under the Endangered Species Act in the 2004 non-Indian and treaty Indian fall season fisheries in the Columbia River Basin. July 9, 2004. 55 pages plus appendices.
- Vander Haegen, G.E., C.E Ashbrook, K.W. Yi, and J.F. Dixon. 2003. In press. Survival of spring chinook salmon captured and released in a selective commercial fishery using gill nets and tangle nets. Fisheries Bulletin?
- Vander Haegen, G.E., K.W. Yi, C.E. Ashbrook, E.W. White and L.L. LeClair. 2002(a). Evaluate live capture selective harvest methods. Final report for BPA Contract 2001-007-00. Washington Department of Fish and Wildlife, Olympia, Washington.
- Vander Haegen, G. E., K.W. Yi, J. F. Dixon, C. E. Ashbrook. 2002(b). Commercial selective harvest of coho salmon and chinook salmon on the Willapa River using tangle nets and gill nets. Final report – IAC contract 01-1018N. Washington Department of Fish and Wildlife, Olympia, Washington.
- Vander Haegen, G.E., L.L. LeClair, and E. White. 2001. Evaluate Tangle Nets for Selective Fishing. Semi-Annual Progress Report, February 1, 2001.
- Washington Monitoring Oversight Committee. 2002. The Washington comprehensive monitoring strategy and action plan for watershed health and salmon recovery. Three volumes.
- Washington Trout. 2002. Comments on the scope of the environmental impact statement for the Puget Sound resource management plan for harvest of Puget Sound chinook salmon; per Federal Register 51547 (August 8, 2002). FAX to Susan Bishop, NMFS NW Region. September 9, 2002. 6 pages.

Puget Sound Anglers,
North Olympic Peninsula Chapter
(PSA)

Letter of Comment



North Olympic Peninsula Chapter

May 11, 2004

Ms. Susan Bishop
National Marine Fisheries Service
7600 Sand Point Way
Seattle, Washington, 98115-0070

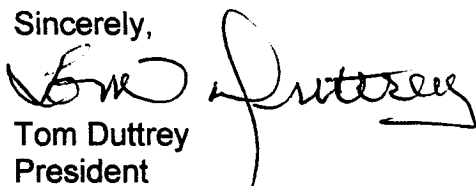
Subject: Puget Sound Chinook Harvest Resource Management Plan, Draft
Environmental Impact Statement, dated April 2004

Dear Ms. Bishop,

Thank you for the opportunity to review the subject plan and to express our preference for the alternative which best meets the conservation and stock recovery goals and objectives of our organization. We heartily endorse the promulgation and implementation of Alternative 1, the proposed action.

The North Olympic Peninsula would be severely impacted by selection of Alternative 3 or 4 and impacted to a somewhat lesser degree by imposition of Alternative 2. We fully support escapement goal management and utilization of stock specific rebuilding exploitation rate limits with the realization that there will be increasing interception of ESA listed Puget Sound Chinook by Alaska and Canada in the coming years. The Pacific Fishery Management Council, through consultation and with support of the Fisheries Regulation Assessment Model, has provided excellent guidance and our Chinook numbers are increasing while providing increasing commercial and recreational opportunity.

Sincerely,



Tom Duttrey
President

Puget Sound Anglers, North Olympic Peninsula Chapter
84 Windsong Lane
Sequim, Wa. 98382
(360) 683-0681

1 **RESPONSE TO COMMENTS RECEIVED FROM PUGET SOUND ANGLERS,**
2 **NORTH OLYMPIC PENINSULA CHAPTER (PSA)**

3 **PSA-1**

4 Comment noted.

5 **PSA-2**

6 Comment noted.

7 **PSA-3**

8 Comment noted.

9 **PSA-4**

10 Comment noted.

Environmental Protection Agency
(EPA)

Letter of Comment



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

July 1, 2004

Reply To
Attn Of: ECO-088

Ref: 04-029-NOA

D. Robert Lohn, Regional Administrator
NMFS/NOAA - Northwest Region
7600 Sand Point Way N.E., Bldg 1
Seattle, WA 98115-0070

Dear Mr. Lohn:

The U.S. Environmental Protection Agency (EPA) has reviewed the draft Environmental Impact Statement (EIS) for **Puget Sound Chinook Harvest Resource Management Plan** (CEQ No. 040170) in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. Section 309, independent of NEPA, specifically directs EPA to review and comment in writing on the environmental impacts associated with all major federal actions and the document's adequacy in meeting NEPA requirements.

The proposed Resource Management Plan (RMP) would regulate commercial, recreational, ceremonial and subsistence salmon fisheries potentially affecting the Puget Sound Chinook Evolutionarily Significant Unit within the marine and freshwater areas of Puget Sound. The RMP also includes implementation, monitoring and evaluation procedures designed to ensure fisheries are consistent with objectives for conservation and use.

The EIS identifies three action alternatives. The Status Quo (Alternative 1) would manage the fishery for a mixture of management-unit-specific escapement thresholds and exploitation rate ceilings. Alternative 2 would utilize an escapement goal management approach while Alternative 3 would utilize escapement goal management at the population level with terminal fisheries only. Under Alternative 4, fishing-related mortality of listed Puget Sound chinook would be eliminated in salmon fisheries within the Strait of Juan de Fuca and Puget Sound. The National Marine Fisheries Service (NMFS) has identified Alternative 1 as the proposed action and preferred alternative.


We have assigned a rating of EC-2 (Environmental Concerns - Insufficient Information) to the draft EIS based on the NMFS's preferred alternative. This rating and a summary of our comments will be published in the *Federal Register*. A copy of the rating system used in conducting our review is enclosed for your reference.

The information presented in the EIS indicates that the Proposed Action would not sustain some of the Puget Sound chinook salmon populations; in particular, critical populations in the Elwha and Dungeness Rivers. Data presented in the EIS shows that these populations are in decline under the current management plan and the Proposed Action (status quo) is to continue with that plan. The Proposed Action does not meet the stated purpose because it does not conserve the productivity, abundance and diversity of some of the Puget Sound chinook salmon populations in the ESU. In addition, under the Proposed Action some populations may be eliminated, preventing tribes from exercising their federally-protected treaty fishing rights and thus not meeting the requirements under U.S. vs. Washington to provide for tribal and non-tribal fishing opportunities.

In addition, we have concerns with Puget Sound chinook salmon fishing-mortalities in Canadian waters and the EIS's applicability to the 2004 fishing season. Detailed comments discussing all of our concerns are enclosed.

Thank you for the opportunity to review this draft EIS. If you would like to discuss these issues, please contact Mike Letourneau at (206) 553-6382.

Sincerely,



Judith Leckrone Lee, Manager
Geographic Unit

Enclosures

cc: Tom Eaton, EPA (Washington Operations Office)
M. Rylko, EPA-R10 Puget Sound/Georgia Basin Coordinator

EPA's Detailed Comments
Puget Sound Chinook Harvest Resource Management Plan Draft
Environmental Impact Statement

Purpose and Need

The Purpose and Need of the EIS focuses on sustainable harvesting of Puget Sound chinook salmon while providing for federally-protected tribal fishing rights. However, the Purpose and Need of the EIS also includes meeting the requirements of Limit 6 of the Endangered Species Act (ESA) 4(d) rule. Limit 6 Rule 4(d) allows for the taking of listed species if it does not appreciably reduce the likelihood of survival and recovery of threatened species. Including the Limit 6 4(d) rule in the Purpose and Need narrows the scope of alternatives and eliminates other management alternatives that might better conserve the Puget Sound chinook salmon.

EPA recommends that the Limit 6 of the ESA 4(d) rule provision in the Purpose and Need of the EIS be eliminated. We believe that the Purpose and Need should focus on ensuring the sustainability of Puget Sound chinook salmon by conserving the productivity, abundance and diversity of the populations of the Puget Sound chinook Evolutionarily Significant Unit (ESU). The EIS could contain alternatives that include provisions that allow for taking of threatened species permitted under the Limit 6 of ESA 4(d) rule or the more restrictive 'no take' provisions under Section 9(a)1 of ESA. We believe that all the provisions discussed in the EIS could be met with a broader Purpose and Need.

The data presented in the EIS demonstrates that despite decreased exploitation rates, some populations of Puget Sound chinook salmon, such as those originating in the Elwha and Dungeness Rivers, continue to decline under the current management plan. The EIS does not discuss how the proposed action (status quo) will meet the stated purpose of conserving the productivity, abundance and diversity of the populations within the Puget Sound chinook ESU (page 1-3) if some populations of Puget Sound chinook salmon would continue to decline even though they are currently at critical levels. The EIS should discuss how the proposed action will meet the stated purpose, or limit the purpose to conserving the productivity, abundance and diversity of the Puget Sound chinook ESU.

Puget Sound Chinook Fishing Mortalities in Canadian Waters

The EIS states that on average Canadian fisheries account for 75 percent of the fishing related mortality on Puget Sound chinook salmon. Fishing mortality of Puget Sound chinook salmon is regulated under the Pacific Salmon Treaty between Canada and the United States. While Canadian fisheries do not harvest chinook salmon at levels allowed under the Pacific Salmon Treaty due to internal Canadian conservation issues, effort and catches in some Canadian fisheries have been increasing. In addition, Canadian chinook and Coho salmon conservation measures are likely to be relaxed to some degree in the next several years resulting in increased Puget Sound chinook salmon fishery mortalities in Canadian waters. The EIS states that it is

unlikely that Canadian catch levels will decrease from those projected to occur in 2003, and more likely that total effort and catch will continue to increase from 2003 levels.

The EIS makes it clear that some of the Puget Sound chinook salmon populations would benefit significantly from reduced Canadian fishery mortality. The EIS should discuss what provisions in the Pacific Salmon Treaty or other informal processes could be exercised to help reduce the Puget Sound chinook salmon fishery mortality in Canadian waters. In addition, the EIS should provide projections for the Puget Sound chinook salmon populations under various scenarios of reduced Canadian fishery mortalities. The EIS should also discuss what plans exist, if any, for working with the Canadians to reduce Puget Sound chinook fishery mortalities.

The EIS states that more details on Canadian harvest patterns and the basis of the maximum northern fisheries scenario is included in Appendix B. While Table B-6 contains information on Canadian listings for harvest mortality on Puget Sound chinook indicator stocks by fishing area, Appendix B (Puget Sound Chinook Population Information) does not discuss the Canadian harvest. The EIS should include the referenced material or delete the reference to the Canadian harvest discussion in the main body of the EIS.

Proposed Action

Information presented in the EIS shows that despite implementation of the proposed management measures many of the Puget Sound chinook salmon populations will continue to decline, not meeting Rebuilding Exploitation Rate (RER), Critical Escapement Threshold (CET) nor Viable Escapement Threshold (VET) goals. In particular, chinook salmon runs in the Dungeness, Elwha, Stillaguamish, Snohomish, Samish, Cedar, Duwamish, Skagit, Nooksack and Skokomish rivers would not meet one or more of the escapement or rebuilding goals with the implementation of the management measures in the Proposed Action (Alternative 1). Implementation of the Proposed Action would result in exploitation rates that do not meet rebuilding exploitation rate (RER) goals for five of nine populations and one management unit, and VETs would be met in only nine of the 18 populations. Alternatives 2, 3 and 4 would meet more of the escapement and exploitation goals than the Proposed Action, with Alternative 4 meeting most of the goals.

The information presented in the EIS demonstrates that sport fishing accounts for a significant portion of the Puget Sound chinook salmon fishing mortality for some populations. In particular, sport fishing accounts for more than 40% of the fishing mortality in the Puyallup, Nisqually and Skokomish river populations and over 90% of the White river population. In addition, recreational fishing in the freshwaters of the Puget Sound area have shown an increasing trend since the early 1990s. The EIS should discuss what measures could be designed for the Puget Sound area sports fishery (e.g., shorter open fishing seasons, bag limits) to assist increasing probability of sustaining the chinook salmon populations.

The EIS limits its discussion of habitat impacts to those the fishery has on marine environments and the impacts the proposed alternatives would have on marine-derived nutrients

from spawning salmon. While the EIS states that some of the chinook salmon populations are at critical levels due to poor freshwater survival and that productivity has declined largely as a result of habitat degradation, it does not discuss the freshwater habitat impacts that affect the productivity, abundance and diversity of the Puget Sound chinook. The EIS should discuss in detail the effects freshwater habitat impacts have on the population of Puget Sound chinook ESU. In particular, the EIS should discuss the effects freshwater habitat impacts could have on RERs, CETs and VETs.

8

The survival and well-being of salmon is seen as inextricably linked to the survival and well being of Indian people and the cultures of the tribes. The EIS describes salmon usage and its cultural significance to the Puget Sound tribes clearly demonstrating how salmon as an economic base and a cultural, ceremonial, and religious staple, has provided for enhanced social cohesion and promoted cultural vitality among Puget Sound tribes.

The management actions proposed in the EIS could potentially affect fishing rights guaranteed by treaty and recognized in U.S. v. Washington (Civil No.C70-9213, Western District, Washington; Federal Supplement 312, Western District, Washington, 1974). Under federal trust responsibilities the United States government assumes the duty of protecting Indian land and ensuring the exercise of tribal fishing and hunting rights. Federal trust responsibility requires that federal agencies carry out their activities in a manner that is protective of Indian treaty rights. Treaties assure the rights of the Puget Sound tribes to the taking of fish at all usual and accustomed grounds and stations. National Marine Fisheries (NMFS) and U.S. Fish and Wildlife Service orders require government-to-government negotiations with affected Indian tribes when exercising their authorities under the Endangered Species Act (ESA), thus acknowledging trust obligations to minimize impacts on tribes as much as possible while still meeting agency responsibilities. NMFS Order 3206 states that salmon recovery efforts must strive to achieve two goals: 1) the conservation and delisting of endangered and threatened species under the ESA; and 2) the restoration of salmon populations to a level sufficient to allow for the full exercise of treaty fishing rights.

If Puget Sound chinook populations go extinct in a tribe's usual and accustomed grounds and stations, that tribe would be prevented from exercising its treaty fishing rights. Data presented in the EIS indicates that some populations, such as those in the Elwha and Dungeness river, are at critical levels and under the proposed management plan and would continue to decline, potentially being eliminated. The EIS should describe how the proposed management plan would allow for all tribes to exercise their fishing treaty rights in their usual and accustomed grounds and stations, despite data that indicates that some populations are at a critical states and declining. The EIS should discuss what measures would be taken (e.g., increase hatchery augmentation) to assure that tribal trust responsibilities would be met.

9

The Proposed Action allows for mixed fish stock management which targets all fishing populations regardless of their viability. Mixed stock fishery management practices, because of their inability to distinguish between weak and strong populations, are biased to over harvesting

10

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of weaker populations. The EIS should describe how the proposed action would overcome the inherent bias that mixed harvest management has on weaker populations.

10

The Proposed Action does not meet the stated purpose because it does not conserve the productivity, abundance and diversity of some of the populations of Puget Sound chinook salmon in the ESU. In addition, under the Proposed Action some populations may be eliminated, preventing tribes from exercising their federally-protected treaty fishing rights and thus not meeting the requirements under U.S. vs. Washington. The EIS should evaluate alternatives that would increase the probability of ensuring the sustainability of Puget Sound chinook salmon by conserving the productivity, abundance and diversity of the populations within the Puget Sound chinook ESU while providing for federally-protected treaty fishing rights and meeting the requirements of U.S. vs. Washington. The EIS should evaluate alternatives that decrease the fishing mortality of Puget Sound chinook salmon in Canadian waters, optimize single stock fishery management practices and investigate options to limit sport fisheries mortalities.

11

12

2004 Fishing Season

The proposed action analyzed in the Draft Environmental Impact Statement (EIS) is the implementation of the Puget Sound Chinook Harvest Resource Management Plan for the 2004 - 2009 fishing years, beginning May 1, 2004. Given that it is currently July 2004 and the development of a final EIS and a Record of Decision on the proposed management actions could take an additional three to five months, it seems appropriate to not include the 2004 fishing year in this plan.

13A

We recommend the EIS either limit the implementation of the Resource Management Plan to the 2005 - 2009 fishing years, or provide information on how the fishery will be managed in 2004 until the EIS is finalized. If provisions exist in management plans currently in place that impact Puget Sound chinook fishing mortality, these should be discussed in the EIS. The EIS should include information on how these highly variable populations of Puget Sound chinook salmon may be impacted under various interim 2004 management regimes. In addition, it should include provisions for updating the Resource Management Plan to reflect actual 2004 exploitation and escapement data.

13B

13C

13D

No Action Alternative

The EIS identifies Alternative 1 as the Status Quo alternative and Alternative 4 as the No Action/No Authorized Take alternative. CEQ Regulations as explained in Federal Register Notice entitled: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (40 FAQs) states that no action is "no change" from current management direction or level of management intensity. The No Action alternative may be thought of in terms of continuing with the present course of action until that action is changed. Alternative 4 would be taking an action that is a change from the current management direction or level of management intensity where Alternative 1 would not. Therefore, Alternative 1 would be the No Action Alternative and the EIS should be modified to identify it as such.

14

Evaluation of a Reduced Hatchery Augmentation Alternative

Hatchery augmentation has been used to reduce the short term risks on a threatened or endangered fish population by increasing abundance in a shorter time frame than may be achievable through natural production. Chinook salmon produced by hatcheries operating in the Elwha, Dungeness, Nooksack, Stillaguamish and White River watersheds are considered essential to the recovery of the Puget Sound chinook ESU. While hatchery reform measures have helped, the EIS is clear that hatchery augmentation still has significant negative impacts on wild salmon populations including loss of within-population genetic diversity, loss of genetic diversity among different populations, and demographic effects such as masking.

The fishery management activities proposed in the EIS are designed to increase the abundance of Puget Sound chinook wild salmon populations. Management measures proposed in some of the alternatives would raise the natural production of some of the wild salmon populations over time, eventually eliminating the need for permanent hatchery augmentation. None of the proposed alternatives in the EIS evaluate reducing hatchery augmentation as the natural populations increase. Reducing hatchery augmentation as natural populations increase would reduce, and eventually eliminate the negative ecological and demographic effects hatchery populations have on wild salmon populations. The EIS should evaluate alternatives that eliminate permanent hatchery augmentation as natural populations increase.

15

Environmental Justice

The EIS does a very good job of analyzing disproportionate impacts on low income and minority communities. It informs the reader of the area of impact, the communities that would be impacted, the reference community and the impacts that this action would have on those communities and the measures taken to achieve meaningful public participation. The analysis presented in the EIS is easy to follow and comprehend. Table 3.7-2 on page 3-157 presents the percentage of minority persons by county, by race in the target area. Under Executive Order 12898, one must consider all the minorities as a whole when comparing to a minority criteria of significance. The EIS should compare the summation of all the minorities within a county to the state criteria. Doing so will demonstrate that King and Pierce county exceed the state minority criteria. However, we agree with the EIS's conclusion that non-tribal minority impacts would not be disproportionate. The EIS should be amended to address the summation of minority populations consistent with Executive Order 12898.

16

**U.S. Environmental Protection Agency Rating System for
Draft Environmental Impact Statements
Definitions and Follow-Up Action***

Environmental Impact of the Action

LO – Lack of Objections

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory

EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

**RESPONSE TO COMMENTS RECEIVED FROM THE
U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)**

EPA-1

The applicant has requested ESA coverage through Limit 6 of the 4(d) Rule which includes specific criteria that a Resource Management Plan must adequately address. NMFS does not have the authority to request that applicants seek ESA coverage under regulatory mechanisms other than what was requested by the applicant. Furthermore, as the Lead Agency for this applicant request, NMFS must disclose the applicants' regulatory request, which is a critical factor in the Purpose and Need for the Proposed Action. NMFS' determination on its review of the Proposed Action under the criteria of Limit 6 is the federal action triggering a NEPA analysis. Therefore, meeting the provisions of Limit 6 of the ESA 4(d) Rule is a critical element of the Purpose and Need (see Draft EIS Subsection 1.6). The criteria of Limit 6 of the 4(d) Rule require that Resource Management Plans submitted under this limit provide information that the proposed Resource Management Plan minimizes the long-term risks to population persistence (50 CFR 223.03[b][i]4[B]), and provide a biological rationale that the Proposed Action will not "appreciably reduce the likelihood of survival and recovery of the ESU in the wild" (50 CFR 223.03[b][i]4[D]). NMFS believes that, "...declining to apply take prohibitions to such programs [4(d) Limits] likely will result in greater conservation gains for a listed ESU than would blanket application of section 9(a)(1) prohibitions..." (65 FR 42422, Background). The basis and background to the 4(d) Rule and Limit 6 is discussed in Subsection 1.5 of the DEIS. Subsection 1.4 of the DEIS (*Background to Purpose and Need*) has been modified to emphasize the importance of including the Limit 6 criteria as an element of the Purpose and Need. The revised language can be found in FEIS Volume 2, Revised Draft EIS.

EPA-2

The Dungeness and Elwha chinook salmon populations are considered to be increasing and stable in abundance, respectively, based on an assessment of escapements before and after listing of the Puget Sound Chinook ESU (NMFS 2004). Escapements are predicted to remain stable for these populations under the most likely scenario of abundance and Canadian fisheries considered in the DEIS, due to supplementation of spawner abundance by local, listed hatchery programs in both rivers. Southern U.S. exploitation rates on these populations are not expected to exceed 5 percent over the duration of the Proposed Action (2005–2009).

NMFS has evaluated the co-managers' Plan using the best available information regarding the expectation of conditions over the proposed duration of the plan (2005–2009), and evaluated the

1 outcome against NMFS’ standards for listed Puget Sound chinook salmon (NMFS 2004). NMFS has
2 concluded in its 4(d) evaluation and in a biological opinion under section 7 of the ESA that the 2005–
3 2009 co-managers’ Puget Sound Chinook Harvest Resource Management Plan would not pose
4 jeopardy to the Puget Sound Chinook ESU. The 4(d) evaluation and section 7 Biological Opinion are
5 incorporated herein by reference and included as Appendices B and C of the Record of Decision.

6 The Puget Sound Chinook ESU, not the component, individual populations, is the primary focus of
7 NMFS’ evaluation of the impacts of the RMP under the ESA. In conducting this evaluation, NMFS
8 takes into account the recommendations of the Puget Sound TRT, which is charged with identifying the
9 biological characteristics of a recovered ESU as part of developing delisting and recovery criteria. The
10 TRT’s preliminary recommendation is that any ESU-wide recovery scenario should include at least two
11 to four viable chinook salmon populations in each of five geographic regions within Puget Sound,
12 depending on the historical life history and biological characteristics of populations in each region.

13 The Puget Sound Chinook ESU includes 22 chinook salmon populations distributed over five distinct
14 geographic areas and several life history types. Total exploitation rates have decreased 14 to 63 percent
15 from rates in the 1980s. Puget Sound chinook salmon escapements have been stable or increasing since
16 the ESU was listed in 1999 for all populations in all regions and life history types, an apparent positive
17 response to the decline in exploitation rates in combination with other factors. Recent years’ average
18 escapement for all but the North Fork Nooksack population is above the critical escapement thresholds,
19 and two to four of the populations in two of the five regions (10 populations over all regions) exceed
20 their viable escapement thresholds, representing the range of life history types in each region. This
21 pattern is expected to continue during the duration of the Proposed Action. Five of the ten RERs are
22 expected to be met under the Proposed Action. Escapements for one of the populations (Green-
23 Duwamish) for which RERs are not expected to be met are expected to meet or exceed the viable
24 escapement threshold for this population across the duration of the Proposed Action.

25 Although concerns remain regarding low abundance of four populations in the remaining three regions,
26 analysis indicated that conducting the Proposed Action between 2005–2009 is expected to have
27 generally little to no effect on the ability to achieve viability criteria in these regions. For example, all
28 but two of the populations that are not expected to meet their viable thresholds under the Proposed
29 Action are also not expected to meet their viable thresholds even if Puget Sound fisheries were
30 eliminated. Based on the stable or increasing trends in escapement; the apparent positive response to
31 significant decreases in exploitation rates for most populations; the distribution and life history
32 representation of chinook populations throughout the ESU relative to their status and the TRT

1 guidance; the low level of exploitation in southern U.S. fisheries for those populations at low
2 abundance; taking into account its Tribal trust responsibility; and the buffer against genetic and
3 demographic risks provided by some associated hatchery programs, NMFS' evaluation of the Proposed
4 Action concluded it would not appreciably reduce the likelihood of survival and recovery of the Puget
5 Sound Chinook ESU.

6 **EPA-3**

7 The Pacific Salmon Treaty allows the parties (the U.S. and Canada) to reach agreements regarding how
8 their intercepting fisheries will be managed, subject to a number of constraining considerations, such as
9 the desire to avoid undue disruption of existing fisheries, both countries' interest in protecting treaty
10 Indian and aboriginal fisheries, etc. (Also see response to comment SW-18.) As a practical matter, the
11 agreed bilateral fishing arrangements tend to be multi-year in duration, and only limited opportunities
12 and mechanisms exist to modify the agreed regimes. The existing arrangements expire after 2008 for
13 chinook and southern coho and chum fisheries, and after 2010 for Fraser River sockeye and pink
14 fisheries. That is why the duration of the Proposed Action in the DEIS coincides with the negotiation of
15 a new Pacific Salmon Treaty agreement in 2009. Until then, the DEIS must take into account the terms
16 of the existing Pacific Salmon Treaty Agreement when evaluating alternatives within the scope of the
17 Proposed Action; i.e., steelhead net and salmon fisheries within Puget Sound. NMFS is unaware of any
18 "informal" processes that may be available to reduce Puget Sound chinook salmon fishing mortality in
19 Canadian waters.

20 **EPA-4**

21 Scenario A (high abundance and 2003 expected Canadian and Alaskan fisheries), and Scenario C (low
22 abundance and 2003 expected Canadian and Alaskan fisheries), described as using 2003 pre-season
23 projections for Canadian fisheries, represent a "reduced Canadian fishery mortality" condition. Actual
24 catches in 2003 Canadian fisheries were higher than pre-season projections and more in line with
25 expected harvest levels in upcoming years.

26 **EPA-5**

27 Canadian fisheries affecting Puget Sound chinook and other salmon are governed by existing
28 agreements developed pursuant to the Pacific Salmon Treaty. The existing arrangements were agreed to
29 in 1999, following several years of very intense bilateral negotiations between the U.S and Canadian
30 governments. The pertinent fishing regimes apply through 2008, except for the provisions governing
31 Fraser River sockeye and pink salmon, which expire after the 2010 fishing season. Working through
32 their representatives to the Pacific Salmon Commission (PSC), the body emplaced to oversee

1 implementation of the Pacific Salmon Treaty, NMFS and the state and tribal co-managers meet
2 annually to discuss the status of salmon stocks and fisheries with their Canadian counterparts. These
3 discussions occur at both the technical and policy levels, and focus on ensuring that the applicable
4 provisions of the agreed regimes are faithfully implemented by both countries. Both countries are
5 obligated to those regimes unless otherwise agreed. It is quite probable that U.S. representatives to the
6 Pacific Salmon Commission process will continue to argue – as they have in the past – for management
7 measures that would further reduce Puget Sound chinook salmon mortality in Canadian fisheries.
8 However, no one can predict the outcome of those discussions, and until something changes or the
9 existing regimes expire, the only valid and prudent assumptions are that the Canadians will comply
10 fully with the agreed regimes and harvest up to their allowed limits (see DEIS Subsection 4.2, *Basis for*
11 *Comparison of Alternatives and Approach to Alternatives Analysis*). (Also see responses to comments
12 SW-18 and EPA-3.)

13 **EPA-6**

14 NMFS agrees and has deleted the language from DEIS Subsection 4.2.3.2, *Basis for Comparison of*
15 *Alternatives and Approach to the Alternatives Analysis*. See FEIS Volume 2, Revised Draft EIS.

16 **EPA-7**

17 Actually, the results of the DEIS evaluation indicate that the specific populations cited by the
18 commentor (Puyallup, Nisqually, Skokomish and White River) would meet their objectives under all
19 alternatives in the DEIS. More broadly, restriction of recreational fisheries for some of the populations
20 not expected to meet their objective under the Proposed Action would not increase the probability of
21 meeting harvest objectives, since the majority of fishing-related mortality is in tribal fisheries; e.g.,
22 Nooksack early chinook salmon. For other populations, harvest management objectives are not
23 expected to be met even if Puget Sound fisheries were eliminated because of the magnitude of harvest
24 in Canadian and Alaskan fisheries; e.g., Dungeness, Elwha, and Nooksack.

25 All measures to shape the recreational fisheries are currently part of the tools of the Proposed Action.
26 However, which measures to use would vary from year to year depending on the status of the various
27 Puget Sound Chinook populations. Appendix C of the Proposed Action, found in DEIS Appendix A,
28 describes some of the actions that would be taken in the recreational fisheries when low abundance
29 thresholds and RERs were not expected to be met. The types of actions include area or time closures,
30 mark-selective or species-selective regulations, limitations on the number of fish retained or type of
31 gear used.

1 Puget Sound chinook salmon populations are currently stable or increasing (NMFS 2004), although
2 several are near their critical escapement thresholds, and the average escapements since listing under
3 the ESA are generally above the average escapements in the years prior to listing. Although the DEIS
4 indicates that while the exploitation rates under the Proposed Action may delay the rebuilding of some
5 populations within the ESU, it does not conclude that any Puget Sound populations would be
6 eliminated as the commentor suggests (see DEIS Subsection 4.3.1.1, *Alternative 1 – Proposed*
7 *Action/Status Quo*). NMFS’ preliminary evaluation of the Proposed Action is that it would not
8 appreciably reduce the likelihood of survival or recovery of listed Puget Sound Chinook salmon
9 (NMFS 2004). See response to comment EPA-2.

10 **EPA-8**

11 NMFS has provided additional language in DEIS Subsection 3.3.1.1, *Puget Sound Chinook*, that gives
12 a broader overview of the effect of habitat activities on the Puget Sound Chinook ESU, and added
13 language to Appendix C2 that describes the effects of habitat impacts and environmental conditions on
14 CETs, VETs and RERs. The added language can be found in FEIS Volume 2, Revised Draft EIS.

15 **EPA-9**

16 Puget Sound chinook salmon populations are currently stable or increasing (NMFS 2004), although
17 several are near their critical escapement thresholds, and the average escapements since listing under
18 the ESA are generally above the average escapements in the years prior to listing. Seven populations
19 have exceeded their viable escapement thresholds in recent years; three have done so consistently.
20 Although the DEIS indicates that while the exploitation rates under the Proposed Action may delay the
21 rebuilding of some populations within the ESU, it does not conclude that any Puget Sound populations
22 would be eliminated (see DEIS Subsection 4.3.1.1). NMFS’ preliminary evaluation of the Proposed
23 Action is that it would not appreciably reduce the likelihood of survival or recovery of listed Puget
24 Sound chinook salmon (NMFS 2004).

25 The future trend in populations will depend on a variety of factors, including harvest (NMFS 2000;
26 PSTRT 2003). Depending on the influence of other sources of mortality, reductions in harvest may
27 have a limited or negligible effect on these trends (NMFS 2004). (See response to comment EPA-8,
28 and comments SW-2, SW-10, SW-26.) The recovery planning process currently underway for the
29 Puget Sound Chinook ESU will specifically address the integration of all the factors affecting the ESU
30 and has as its major objectives the two goals listed by the commentor. Regarding the DEIS, any of the
31 alternatives would implement harvest management objectives that are consistent with current
32 environmental conditions, and take into account fishing-related mortality even in fisheries outside the

1 Action Area. Under the DEIS alternatives, those objectives would be revised as habitat changes.
2 Mitigation measures for effects unrelated to the Proposed Action, are outside the scope of the Action.
3 The effect of different hatchery production levels on tribal treaty rights will likely be evaluated as part
4 of an EIS NMFS is conducting on Puget Sound hatchery programs.

5 The Puget Sound Treaty Tribes assert, in providing the RMP jointly with WDFW to NMFS, their
6 strong belief that current Puget Sound chinook abundance is far below what is required to satisfy treaty
7 tribal fishing rights. In most areas, chinook harvest is limited to what is caught incidentally in fisheries
8 targeted at other species, and targeted to ceremonial and subsistence needs. However, under the
9 Proposed Action, all Puget Sound tribes are currently able to exercise their treaty-reserved fishing
10 rights for salmon in their usual and accustomed grounds and stations, although at much reduced levels
11 from the past.

12 **EPA-10**

13 This comment is refers to mixed-stock management practices that manage the abundance of fish in a
14 fishery made up of multiple stocks as an aggregate; i.e., as if it was only one stock. The Proposed
15 Action would not manage mixed-stock fisheries as an aggregate. Current management tools can
16 estimate the contribution of each management unit to the fishery. As described in DEIS Section 2.3.1
17 (*Alternative 1 – Proposed Action/Status Quo*), the Proposed Action would manage mixed-stock
18 fisheries for the harvest management objective of the weakest management unit in the fishery,
19 foregoing harvest of stronger management units, if necessary, to protect the weaker management units.
20 DEIS Section 2.3.1 has been revised to make this point more clearly in FEIS Volume 2, Revised Draft
21 EIS.

22 **EPA-11**

23 See responses to comments EPA-2, EPA-9 and WT-15.

24 **EPA-12**

25 See responses to comments EPA-3, EPA-4, EPA-5, EPA-7, EPA-10, and NFS-8 and NFS-10.

26 **EPA-13A**

27 NMFS agrees with the commentor and has changed the EIS to reflect the 2005–2009 fishing seasons.
28 NMFS completed an ESA section 7 consultation on a fishing plan for the 2004 Puget Sound steelhead
29 net, and salmon commercial and recreational fisheries that take listed Puget Sound chinook (NMFS
30 2004).

EPA-13B

The 2004 salmon and steelhead fisheries discussed in response to comment EPA-13A will be conducted under the terms of the Puget Sound Chinook Harvest Resource Management Plan consistent with those described in the DEIS, so no revisions to the DEIS are necessary.

EPA-13C

See responses to comments EPA-13A and EPA-13B.

EPA-13D

Because chinook salmon adults return through October in many systems, final escapement estimates for the 2004 chinook salmon return will not be available until Spring of 2005. Catch of chinook salmon returning in 2004 in commercial and recreational fisheries also occurs into the Fall, and therefore, final catch estimates will not be available until late Winter or Spring of 2005. The data required to estimate exploitation rates on all chinook salmon cohorts that contributed to fisheries in 2004 is based on coded-wire tag recoveries and information collected over a wide range of fisheries and jurisdictions, and generally takes up to six years to complete. Therefore, information on 2004 exploitation rates and escapement will not be available in time to include in the FEIS.

CEQ Regulations (40 CFR §1503.4) require that the agency preparing the Final Environmental Impact Statement respond to public comments by modifying or considering additional alternatives, modifying its analysis, making factual corrections, or explaining why no response is warranted. It does not require modification of the Proposed Action (the Resource Management Plan), although the applicants may choose to do so based on consideration of public comment. However, the Proposed Action does contain provisions for annual reporting that includes estimates of exploitation rates and escapement (DEIS Subsection 2.3.1), and requires a periodic review and update of the entire Resource Management Plan (Subsection 7.5 of the Proposed Action, found in DEIS Appendix A).

EPA-14

NMFS agrees with EPA's characterization of Alternatives 1 and 4 with regard to CEQ Regulations. However, the titles of the alternatives refer to specific alternatives mandated in the settlement agreement reached with Washington Trout (Washington Trout v. Lohn). This potential confusion was clarified for readers in DEIS Subsection 4.2.1 (*No Action Alternative*) by stating that Alternative 1 is the No Action Alternative under CEQ regulations. In addition, all alternatives were compared with Alternative 1 as the No Action alternative as required by CEQ regulations to evaluate how the other alternatives would change relative to existing conditions.

1 **EPA-15**

2 Evaluation of the effects of decreased hatchery chinook salmon production levels on natural population
3 abundance is outside of the scope of the Puget Sound Chinook Harvest Management Plan DEIS.
4 Alternatives to current hatchery chinook salmon production levels in Puget Sound, including increases
5 and decreases in juvenile fish production levels, will be evaluated within a separate on-going EIS being
6 administered by NMFS and directed at regional hatchery programs.

7 **EPA-16**

8 Comment noted. NMFS has made the necessary revisions to DEIS Section 3.7 in FEIS Volume 2,
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